डॉ. वी पी शर्मा, (पूर्व निदेशक) की सटिप्पण ग्रंथ सूची आईसीएमआर-एनआईएमआर, नई दिल्ली अनुसंधान प्रकाशन (1970-2015)

Annotated Bibliography of Dr. VP Sharma, (Former Director) ICMR-NIMR, New Delhi Research Publications (1970-2015)

संकलन एवं संपादन

राशिद परवेज

सहायक पुस्तकालय एवं सूचना अधिकारी

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Annotated Bibliography of Dr. VP Sharma

Research Publications (1970-2015)

Contents

Master List

Titles: A-Z

1970

1. **Sharma VP**, Hollingworth RM, Paschke JD. Incorporation of tritiated thymidine in male and female mosquitoes, Culex pipiens with particular reference to spermatogenesis. *J Insect Physiol* 1970Mar;*16*(3):429–36.PMID:5438064doi:10.1016/0022-1910(70)90183–6. https://pubmed.ncbi.nlm.nih.gov/5438064/

ABSTRACT

The progress of spermatogenesis in the mosquito Culex pipiens was servedautoradiographically after injection of tritiated thymidine. The transformation of labelled spermatogonia and primary spermatocytes into mature sperms required 10 days and 9 days respectively. Three to four days were required to form the spermatocytes, less than 1 day in meiosis and 5 more days for the transformation to the morphologically mature sperm. The implications of these observations for control by the sterile male technique are discussed. In female mosquitoes the nurse and follicle cells and the oijcytes readily incorporate thymidine into DNA during ovarian diapause. The label is retained by the nurse cells for at least 22 hr after a blood meal but is lost in the later stages of vitellogenesis, probably by depolymerization.

1972

2. **Sharma VP**, Patterson RS, Ford H R. A device for the rapid separation of male and female mosquito pupae. *Bull World Health Organ* 1972; *47*(3):429–32 PMID: 4405507 PMCID: PMC2480716
https://pubmed.ncbi.nlm.nih.gov/4405507/

ABSTRACT

A new device for separating male and female C. p. fatigans is described. The device is particularly adaptable for the separation of large numbers of pupae without mechanical injury. It also appears to be suitable for use with other species of mosquito.

1973

3. **Sharma VP**, Patterson RS, Grover KK, LaBrecque GC. Chemosterilization of thetropical house mosquito Culex pipiens fatigans Wied: laboratory and field cagestudies. *Bull World Health Organ* 1973;*48* (1):45–8. PMID: 4196835 PMCID: PMC2481048 https://pubmed.ncbi.nlm.nih.gov/4196835/

ABSTRACT

Tris (1-aziridinyl)phosphine sulfide was found to be an excellent sterilant for male Culex pipiens fatigans. When male pupae were exposed to a 0.6% solution for 3 hours, the ensuing adults were rendered permanently sterile with no apparent reduction in their vigour or longevity based on laboratory and field cage studies. Females, however, exposed to the same dosage for the same length of time were partially fertile.

1976

4. S**harmaVP.** Elimination of aziridine residues from chemosterilised mosquitoes. *Nature* 1976 May13;261(5556):135.PMID:5682doi:10.1038/261135a0. https://pubmed.ncbi.nlm.nih.gov/5682/

1977

5. Ansari MA, Mani TR, **Sharma VP**. A preliminary note on the colonization of Anopheles culicifacies Giles. *J Commun Dis* 1977; *9*:206–207.

6. **Sharma VP**, Mani TR, Adak T, MA Ansari. Colorless-eye, a recessive autosomal mutant of Anopheles stephensi. *Mosquito News* 1977;*37*:667–669.

ABSTRACT

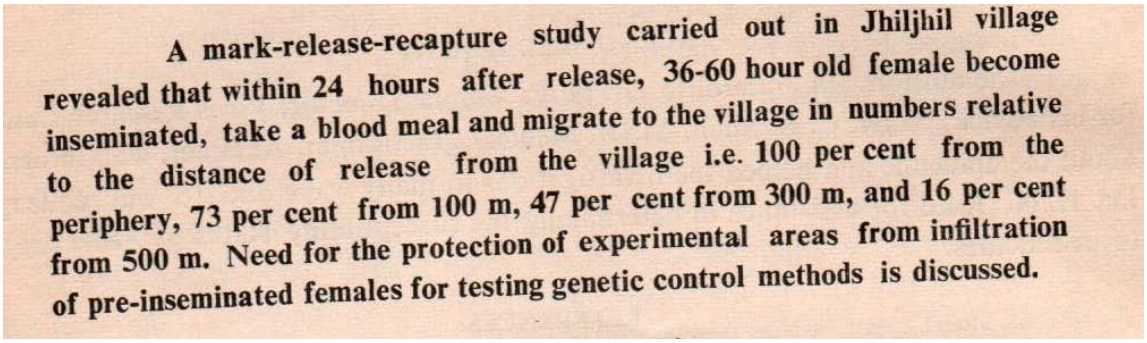
A recessive autosomal Colorless-eye mutant has been found spontaneously occurring in a laboratory colony of Anopheles stephensi Liston. Mosquitoes of this genotype express Colorless-eye at the larval, pupal and adult stage.

7. **Sharma VP**, Batra CP, GD Brooks. Control of Culex pipiens fatigans Wied. in drains usind a growth regulating compound, OMS-1390. *J Commun Dis* 1977;*9*:136–138.

8. **Sharma VP**. Evaluation of ENT-61585 as a chemosterilant for Culex pipiens fatigans Wied. *J Commun Dis* 1977;*9*:71–73.

9. **Sharma VP**. Insemination rate in Culex pipiens fatigans Wied. Moving from wells to the village. *J Commun Dis* 1977;*9*:128–131.

ABSTRACT



A mark-release-recapture study carried out in Jhiljhil village revealed that within 24 hours after release, 36-60 hour old female become inseminated, take a blood meal and migrate to the village in numbers relative to the distance of release from the village i.e. 100 per cent from the periphery, 73 per cent from 100 m, 47 per cent from 300 m, and 16 per cent from 500 m. Need for the protection of experimental areas from infiltration of pre-inseminated females for testing genetic control methods is discussed.

10. **Sharma VP**, Curtis CF, Vaidyanthan V. Laboratory studies with chemosterilized male Culex pipiens fatigans for the determination of the optimum quality of release material. *Indian J Med* Res 1977;*65* Suppl:107–14. PMID: 98438
https://pubmed.ncbi.nlm.nih.gov/98438/

11. **Sharma VP**. Sterility evaluation of F1 progeny of the sterilized Culex pipiens fatigans Wied. *J Commun Dis* 1977;*9*:139–140.

1978

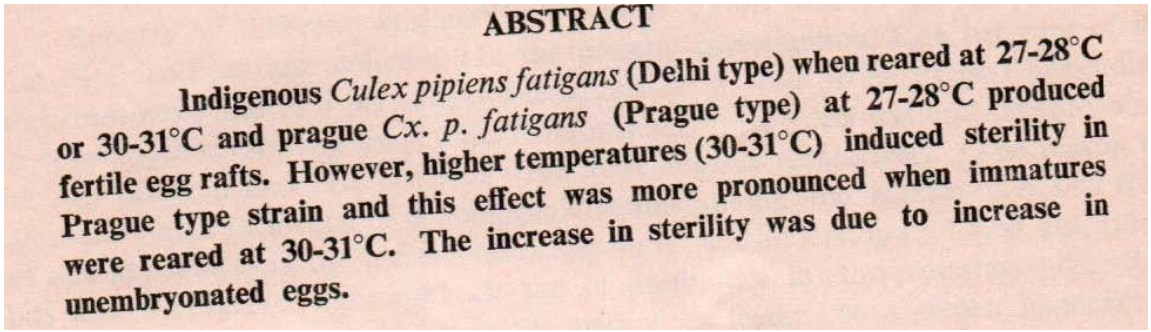
12. **Sharma VP**, Razdan RK, Ansari MA. Anopheles stephensi: effect of gamma–radiation and chemosterilants on the fertility and fitness of males for sterile male releases. *J Econ Entomol* 1978 Jun15;*71*(3):449–50.doi:10.1093/jee/71.3.449.PMID:690317 https://pubmed.ncbi.nlm.nih.gov/690317/

ABSTRACT

Irradiation of AnoPheles stephensi Liston male pupae with 8 krad induced 97.2% male sterility. Higher ir· radiation of 12 krad resulted in ca. 2% increase of sterility (99.1%) with reduced fitness of males for mating and survival. Four krad irradiation of females resulted in inhibited egg production and at 7 krad there was complete failure of females to lay eggs. Thiotepa was not effective in the sterilization of mosquitoes at the pupalstage. Dipping mosquito pupae in 1% P, P·bis (I·aziri· dinyl) -N-methylphosphinothioic amide for 2 h induced 100% sterility in both sexes. Chemosterilized males were permanently sterile and comparable in quality (mating competitiveness, mating ability, and survival) with untreated males.

13. **Sharma VP**, Subbarao SK, Adak T, RK Razdan. Effect of temperature on the fertility of Culex pipiens fatigma (Prague cytoplasm). *J Commun Dis* 1978;*10*(3):148–150.

ABSTRACT



ABSTRACT

Indigenous *Culex pipiens fatigans* (Delhi type) when reared at 27-28°C or 30-31°C and prague *Cx. p. fatigans* (Prague type) at 27-28°C produced fertile egg rafts. However, higher temperatures (30-31°C) induced sterility in Prague type strain and this effect was more pronounced when immatures were reared at 30-31°C. The increase in sterility was due to increase in unembryonated eggs.

14. Ansari MA, **Sharma VP**, RK Razdan. Mass rearing procedures for Anopheles stephensi. Liston. *J Commun Dis* 1978;*10*(2):131–135.

ABSTRACT

Methods for the mass production of *Anopheles stephensi stephensi* Liston have been described. It was revealed that stocking 500 male and 1500 female pupae on alternate days provides maximum eggs on sustained basis using a cycling colony. It was also revealed that a maximum of 15,000 larvae can be reared in a plastic tray as against 30,000 of *Cx. p. fatigans* or *Ae. aegypti*.

1979

15. **Sharma VP**, Subbarao SK, Ansari MA, Razdan R.K. Inheritance pattern of two new mutants red eye and greenish brown larva in An. Stephensi. *Mosq News* 1979;*39*:655–657.
https://agris.fao.org/agris-search/search.do?recordID=US19800580479

ABSTRACT

Two new mutants, red-eye and greenish brown-larva have been isolated and genetically analyzed in An. stephensi type form. The inheritance pattern revealed that red-eye is a recessive sex-linked mutant and greenish brown-larva is an autosomal recessive mutant.

16. **Sharma VP**, Subbarao SK, Adak T, Razdan RK. Integration of gamma irradiation and cytoplasmic incompatibility in Culex pipens fatigans (Diptera : Culicidae). *J Med Entomol* 1979, *15*(2):155–156. https://doi.org/10.1093/jmedent/15.2.155
https://academic.oup.com/jme/article-abstract/15/2/155/897719

ABSTRACT

To use the phenomenon of cytoplasmic incompatibility III the control of Cx. p. fatigans, Prague cytoplasmic type strain was irradiated with gamma rays to overcome the Problem of fertility within the strain and also that of matings between minority-type males and misclassified females. It was shown that 4 krad irradiation induces 100% sterility in females and 66.5% sterility in males without any adverse effect on the male mosquitoes.

17. **Sharma VP**, Batra CP, Brooks GD. Laboratory and field evaluation of a growth-regulating compound (TH-6040) against Culex pipiens fatigans (Diptera: Culicidae). *J Med Entomol* 1979 Sep4;*15*(5-6):506–9.PMID:120899doi:10.1093/jmedent/15.5-6.506. https://pubmed.ncbi.nlm.nih.gov/120899/

ABSTRACT

A growth-regulating compound (TH-6040) was evaluated for the comrol of Culex pipiens fatigans. Applied at the LC., dosage (0.001 ppm), the compound did not induce sterility in males or females or affect the mating ability of treated males. The compound decreased the life span of both sexes surviving after treatment; this effect was less pronounced when sexes were caged together. Third-instar larvae were more sensitive than 4th-instar larvae, and pupae showed no adverse effects in response to treatment. However, TH-6040 induced many morphological abnormalities which were visible in emerged adults. Eighty to 100% comrol of ex. p.fatigans breeding in polluted drains was achieved by application to larvae in target dosages of 0.5 ppm and 1.0 ppm. The residual effect ofthis larvicide in field applications was approximately 4 days.

1980

18. Subbarao SK, T Adak , **Sharma VP**. Anopheles culicifacies: sibling species distribution and vector incrimination studies. *J Commun Dis* 1980 Jun; *12*(2):102–4. PMID: 7198132 https://pubmed.ncbi.nlm.nih.gov/7198132/

19. **Sharma VP**, SK Subbarao. Insecticide resistance: Tackling the problem areas. *J Commun Dis* 1980 Jun;*12*(2):88–90. PMID: 7310101 https://pubmed.ncbi.nlm.nih.gov/7310101/

20. **Sharma VP.** Parameters for assessment of the epidemiological situation of malaria. *J Commun Dis* 1980 Mar; *12*(1):46–8.PMID: 7451934 https://pubmed.ncbi.nlm.nih.gov/7451934/

Titles: A-Z

1981

21. **Sharma VP**, Das M, Bendle MS, Razdan RK. Comparative susceptibility of sterilized and genetically-defined strains of Aedes aegypti to Dirofilaria repens. *J Commun Dis* 1981 Mar;*13*(1):17–23. PMID: 6798102
https://pubmed.ncbi.nlm.nih.gov/6798102/

ABSTRACT

Dipping of *Aedes aegypti* pupae in 0.6 per cent thiotepa for 3 hours induced 99.8 per cent and 43.3 per cent sterility in male and female mosquitoes respectively. Adult dusting with 10 per cent thiotepa induced 100 per cent sterility in both sexes. Exposure of pupae to 6 kR induced 99.5 per cent sterility in males, and females failed to oviposit at 4 kR. Mosquitoes sterilized in this way were tested in respect to their susceptibility to the development of *Dirofilaria repens*. It was revealed that chemosterilization or radiosterilization of pupae, and of adults, prior to an infective blood meal does not retard or facilitate development of the parasite. The same treatment of adults after the ingestion of infective blood meal retards/inhibits parasite development.

The susceptibility of translocated strains (T_1 T_1, T_3 T_3 and DT_1/T_3) and sex distorter strains was found equal to untreated controls whereas susceptibility of JY multiple marker strain was significantly reduced.

22. Menon PKB , **Sharma VP**. Geographic variations in life table attributes of four populations of Anopheles stephensi Liston from India. *Ind J Mal* 1981;*18*(2):91–97.

23. Verma, Tushar K, **Sharma VP**. Salivary Gland Chromosomes of Anopheles annularis. *Ind J Mal* 1981;*18*(2):103–108.

24. Saxena VK, **Sharma VP**. Water Mites (Arrenurus sp.) Parasitising Mosquitoes in Uttar Pradesh Terai, District Nainital. *Ind J Mal* 1981;*18*(1):51–52.

1982

25. Ansari MA, RK Radan, **Sharma VP**, TR Mani. Ecology of anophelines in Basantpur village situated on the bank of Jamuna. *Indian J. Malar* 1982;*19*(1):64–68.

26. Subbarao, Sarala KT, Adak K, Vasantha, **Sharma VP**. Genetics of a sex-linked and two autosomal mutants in species B of the taxon Anopheles culicifacies Giles. *Indian J. Malar* 1982; *19*(2):83–90.

27. **Sharma VP** , HC Uprety, Nutan Nanda. Impact of DDT spraying on malaria transmission in villages with resistant Anopheles culicifacies. *Indian J Malar* 1982;*19*(1):5–12.

28. Vasantha K., Sarala K. Subbarao, T. Adak, & V.P. Sharma. Karyotypic variations in Anopheles culicifacies complex. *Indian J Malar* 1982;*19*(1):27–32.

29. **Sharma VP**, Mehrotra KN. Malaria resurgence. *Nature* 1982 Nov 18; *300*(5889):212. PMID: 7144877 DOI: 10.1038/300212d0 https://pubmed.ncbi.nlm.nih.gov/7144877/

30. Uprety HC, VK Gupta, **Sharma VP**. Modified plan of operation and its impact on malaria. *Indian J Malar* 1982;*19*(2):137–138.

31. **Sharma VP**. Observations on the incidence of malaria in India. *Indian J Malar* 1982;19(1)57–8.

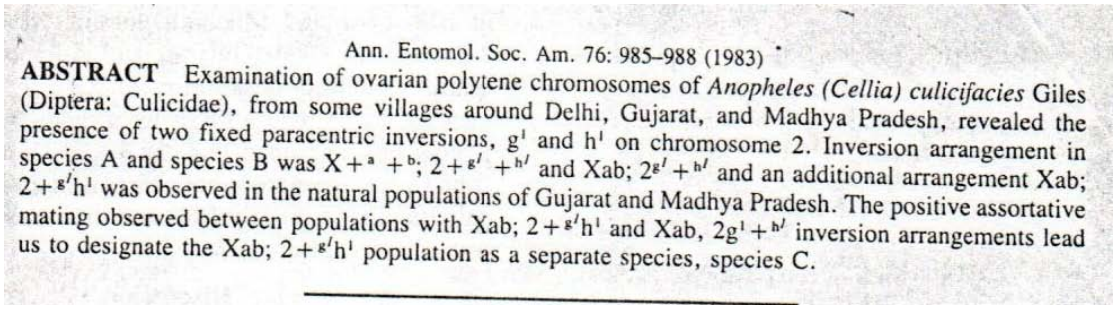
32. **Sharma VP**, HC Uprety. Preliminary studies on irrigation Malaria. *Indian J Malar* 1982;*19*(2): 139–141.

33. **SharmaVP**, Mehrotra KN. Return of malaria. *Nature* 1982 Jul 8;*298*(5870):210. PMID: 7088174 DOI: 10.1038/298210a0 https://pubmed.ncbi.nlm.nih.gov/7088174/

1983

34. Subbarao, Sarala K, Vasantha K, Adak T, **Sharma VP**. Anopheles culicifacies complex: Evidence for a new sibling species, *C. Ann Ent Soc Amer* 1983;*76*(6):985–988. https://academic.oup.com/aesa/article-abstract/76/6/985/16342?redirectedFrom=fulltext

ABSTRACT



Ann. Entomol. Soc. Am. 76: 985–988 (1983)

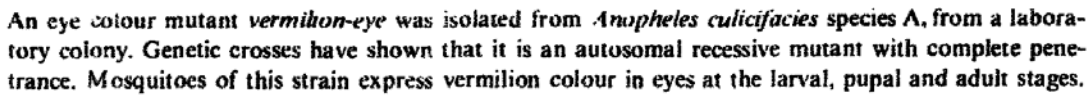
ABSTRACT Examination of ovarian polytene chromosomes of *Anopheles (Cellia) culicifacies* Giles (Diptera: Culicidae), from some villages around Delhi, Gujarat, and Madhya Pradesh, revealed the presence of two fixed paracentric inversions, g^1 and h^1 on chromosome 2. Inversion arrangement in species A and species B was $X+^{a}+^{b}$; $2+^{g^1}+^{h^1}$ and Xab; $2^{g^1}+^{h^1}$ and an additional arrangement Xab; $2+^{g^1}h^1$ was observed in the natural populations of Gujarat and Madhya Pradesh. The positive assortative mating observed between populations with Xab; $2+^{g^1}h^1$ and Xab, $2g^1+^{h^1}$ inversion arrangements lead us to designate the Xab; $2+^{g^1}h^1$ population as a separate species, species C.

35. Vasantha, K., Sarala K. Subbarao, T. Adak, **Sharma VP**. Anopheles culicifacies Mitotic karyotype of species C.*Indian J. Malarial* 1983;*20*(2):161–162.

36. **Sharma VP**, Mehrotra KN. Final words on malaria's return. *Nature* 1983; Mar 31-Apr 6; 302 (5907): 372. PMID: 6835370 doi: 10.1038/302372b0. https://pubmed.ncbi.nlm.nih.gov/6835370/

37. Adak T, Sarala K, Subbarao K, **Sharma VP.** Inheritance Pattern of vermilion - eye in Anopheles culicifacies species A. *Indian J. Malariol* 1983;*20*(1):59–61.

ABSTRACT



An eye colour mutant *vermilion-eye* was isolated from *Anopheles culicifacies* species A, from a laboratory colony. Genetic crosses have shown that it is an autosomal recessive mutant with complete penetrance. Mosquitoes of this strain express vermilion colour in eyes at the larval, pupal and adult stages.

38. Varma, Tushar K. **Sharma VP**. Karyotypic studies on Anopheles fluviatilis. *Indian J Malariol* 1983;*20*(2):137–139.

ABSTRACT

Somatic chromosomes from neurogonial cells of *Anopheles fluviatilis*, an important vector of malaria, were karyotyped and measured to construct the idiogram. The diploid complement consists of six chromosomes which align into 3 pairs with distinguishable length and morphology. Both the autosomal and sex chromosomal pairs were found to be metacentric. The sex chromosomes were homomorphic in females and heteromorphic in males.

39. Chandrahas RK, **Sharma VP.** Malaria epidemic in Shahjahanpur. *Indian J Malariol* 1983;*20*(2):163–166

40. Adak T, Sarala K, Subbarao, **Sharma VP**. Male specific esterases in certain anopheline mosquitoes. *Mosq News* 1983; 43:14–16.

ABSTRACT

Malaria Research Centre (ICMR), 22-Sham Nath Marg, Delhi-54, India

ABSTRACT. Five anophelines viz., *Anopheles annularis*, *An. culicifacies*, *An. fluviatilis*, *An. stephensi* and *An. subpictus*, were studied with respect to non-specific esterases using polyacrylamide gel electrophoresis. Male specific esterases were found in *An. stephensi* and *An. subpictus* and not in the other three anophelines tested. In both the species, bands were localized in the accessory glands. In *An. stephensi*, the male specific esterase band appeared first in 18–20 hr old pupae while in *An. subpictus* they appeared in 0–1 hr old pupae. These bands persisted during the adult life of the male mosquitoes.

41. Nagpal BN, **Sharma VP**. Morphological variations in a natural population of Anopheles vagus Donitz (1902) collection from SNdaman Islands. *Indian J Malariol* 1983;*20*(1):35–44.

ABSTRACT

About 11,000 mosquitoes were collected from Andaman islands during a fauna survey in January-February, 1982. Of these 8029 were *Anopheles vagus*. This was also the dominant species during this period. A total of 366 *Anopheles vagus* showed variations in palpi, proboscis, wings and abdomen.

42. Uprety HC, Srivastava PK, Nagpal BN, **Sharma VP**. Mosquito breeding survey in urban Delhi. *Indian J Malariol* 1983;*20*(1):79–82.

43. Nagpal BN, **Sharma VP**. Mosquitos of Andaman Islands. *Indian J Malariol* 1983;*20*(1):7–14.

ABSTRACT

Twenty-four mosquito species belonging to five genera were collected from the south, middle and north islands of Andaman. Seven *Anopheles* species, *A. annularis, A. nigerrimus, A. nivipes, A. karwari, A. stephensi, A. subpictus* and *A. varuna* were recorded for the first time. The distribution, abundance and results of bait collections are recorded.

44. Nagpal BN, **Sharma VP.** Mosquitoes of Coastal Orissa. *Indian J Malariol* 1983;*20*(2):141–145.
https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.516.992&rep=rep1&type=pdf

ABSTRACT

A total of 32 species of mosquitoes belonging to six genera i.e., *Anopheles, Aedes, Aedeomyia, Armigeres, Culex* and *Mansonia* were collected during the surveys carried out in December 1980, September 1981 and June-August 1982 in Coastal districts of Balasore, Cuttack, Puri and Ganjam. *Anopheles minimus* and *A. pulcherrimus* were recorded for the first time from this region. Four anopheline species i.e., *A. jeyporiensis, A. maculatus, A. sundaicus* and *A. theobaldi* earlier reported from this region were absent.

45. Nagpal, BN, Yogendra Kumar, Usha Sharma **Sharma VP**, Mosquitoes of Nainital, Terai (UP). *Indian J Malariol* 1983; *20*(2):129–135.

ABSTRACT

Twenty nine mosquito species belonging to 8 genera viz. *Anopheles, Aedeomyia, Aedes, Armigeres, Coquillettidea, Culex, Mansonia* and *Mimomyia* were collected from the six tehsils of U.P. terai (Nainital) during mosquito fauna survey carried out in Sept. 1980, May-June 1981, Sept.-Oct. 1981 and Jan.-Feb. 1982. Three species of genus Anopheles i.e. *A. aitkenii, A. lindesayi* and *A. kochi* were collected for the first time from this belt. *A. karwari* and *A. minimus* previously reported from this belt were absent. The seasonal prevalnce of some important anophelines was studied.

46. Choudhury DS, Malhotra MS, Shukla RP, Ghosh SK, **Sharma VP.** Resurgence of malaria in Gadarpur PHC district Nainital, Uttar Pradesh. *Indian J Malariol* 1983*; 20*(1):49–58.

ABSTRACT

An outbreak of malaria was detected in Gadarpur PHC of Nainital district, Uttar Pradesh during 1982-83. Out of 19,318 blood slides collected from fever cases, 13,051 showed malaria parasites giving a slide positivity rate of 67.5%. Among the positives, 9,332 were *P. falciparum* (71.5%). *A. culicifacies* and *A. fluviatilis* were incriminated as vectors of malaria during the outbreak. In *A. culicifacies*, sporozoite rates of 0.79, 2.4 and 6.0% were found during September, October and November respectively. In *A. fluviatilis*, sporozoite rates of 1.4, 0.0 and 6.2% were found during the corresponding period.

47. **Sharma VP,** Choudhury DS, Ansari MA, Malhotra MS, Menon PKB, Razdan RK, Batra CP. Studies on the true incidence of malaria in Kharkhoda (District Sonepat, Haryana) and Kichha (District Nainital, U.P.) Primary Health Centres. *Indian J Malariol* 1983;*20*(1):21–34.

ABSTRACT

Intensive surveillance revealed that malaria incidence was extremely high in Kichha and Kharkhoda PHCs. The study also revealed that NMEP's surveillance was recording a small number of malaria cases, and that the ongoing surveillance was missing the *vivax* and *falciparum* malaria peaks and was not sensitive enough to reveal the real effect of spraying. The study was useful in organizing malaria control operations in Kharkhoda PHC and pointed out that small focus of *falciparum* malaria should be stamped out from Kichha PHC. The importance of better surveillance is emphasized in the present day context of malaria control.

48. Nagpal BN, **Sharma VP.** Variation in ornamentation of palpi of Anopheles sundaicus Rodenwaldt (1925) collection from Andaman Islands, India. *Indian J Malariol* 1983; *20*(1):85–87

49. **Sharma VP.** Vital staining of the malaria parasites. *Indian J Malariol* 1983;*20*(1):83–84.

1984

50. **Sharma VP.** Effect of malathion spraying on four anopheline species and the development of resistance in A. stephensi in Mandora, Haryana. *Indian J Malariol* 1984 Dec; *21*(2):109–14. PMID: 6536540
https://pubmed.ncbi.nlm.nih.gov/6536540/

ABSTRACT

Densities of *A. annularis, A.culicifacies, A. stephensi* and *A. subpictus* were monitored in village Mandora, Haryana, before and after malathion spraying. The malathion spraying interrupted the transmission of malaria and decimated the *A. annularis, A. culicifacies* and *A. subpictus* populations. The spraying was initially effective for *A. stephensi* but later there was a gradual build up of the populations, suggesting the ineffectiveness of the spray in the control. Bioassay tests confirmed that the resistance precipitated at a rapid rate in *A. stephensi*.

51. Adak T, Sarala K, Subbarao, **Sharma VP**. Genetics of three esterase loci in Anopheles stephensi Liston. *Biochem Genet* 1984;*22*(5-6):483–94 DOI: 10.1007/BF00484518 PMID: 6466290
https://pubmed.ncbi.nlm.nih.gov/6466290/

ABSTRACT

A survey of laboratory strains of Anopheles stephensi for nonspecific esterases by polyacrylamide gel electrophoresis revealed 10 zones of esterase activity. In 3 of the 10 zones, three electromorphs were observed. Genetic analysis revealed that these three zones are controlled by three loci, viz., Est-3, Est-4, and Est-5, and that the electromorphs are codominant alleles at each locus. The three esterase loci were found linked to each other and to an autosomal marker colorless-eye. The esterase loci have tentatively been placed in linkage group II. The probable gene sequence on chromosome 2 is either c-Est-3-Est-4-Est-5 or c-Est-4-Est-3-Est-5.

52. **Sharma VP**. Laboratory experiments on the effectiveness of expanded polystyrene (EPS) beads in mosquito control. *Indian J Malariol* 1984 Dec;*21*(2):115–8. PMID: 6549537
https://pubmed.ncbi.nlm.nih.gov/6549537/

ABSTRACT

Laboratory tests were done on the usefulness of expanded polystyrene (EPS) beads in mosquito control. It was revealed that the application of EPS beads @ 1gm/240 cm^2 to form 3 to 4 layers on water produced high larval and pupal mortality and prevented mosquitoes from laying eggs. The order of effectiveness was *Culex quinquefasciatus* > *Anopheles culicifacies* > *Anopheles stephensi* > *Aedes aegypti*. The method may be a viable alternative to the current methods used in the control of mosquito breeding, atleast in certain situations.

53. Ansari MA, Batra CP, **Sharma VP**. Outbreak of Malaria in villages of Bareilly, district U.P. *Indian J Malariol* 1984;*21*(2):121–3. PMID: 6536541
https://pubmed.ncbi.nlm.nih.gov/6536541/

1985

54. Malhotra MS, Shukla RP, **Sharma VP**. A three year report of the malaria clinic in Haldwani, District Nainital, U.P. *Indian J Malariol* 1985 Dec;*22*(2):123–6. PMID: 3830746
https://pubmed.ncbi.nlm.nih.gov/3830746/

55. Nanda N, Dass CM, **Sharma VP**. An ultrastructural study on the sporogony of Plasmodium vivax in Anopheles stephensi. *Indian J Malariol* 1985 Jun;*22*(1):1–15. PMID: 3896870
https://europepmc.org/article/med/3896870

ABSTRACT

The present study was carried out to investigate the ultrastructural features of the successive stages involved in sporozoite formation from the solid oocyst in case of *P. vivax*.Appearance of vacuoles just beneath the oocyst capsule marks the beginning of sporoblast segregation. From the sporoblast cytoplasm the sporozoites are budded off in a manner similar to merozoite formation. The budding sporozoites show rudiments of the pellicular components and apical complex. Further development is accompanied by the migration of nuclear material from the sporoblast to the sporozoite. After dehiscence of the oocyst, the free sporozoites are released into the haemocoelomic fluid and they invade the acinal cells of the salivary glands and mature into infective forms. The developmental sequence observed is compared with that of other mammalian and avian malaria parasites.

56. Joshi H, Raghavendra K, Subbarao SK, **Sharma VP**. Distribution of human blood polymorphic systems in two Haryana villages. *Indian J Med Res* 1985 Feb;.*81*: 180–5. PMID:3859468
https://pubmed.ncbi.nlm.nih.gov/3859468/

57. Mittal PK, Pant CS, Basil A, Jayaraman K, **Sharma VP**. Evaluation of the formulations of the mosquito larvicidal agent BIOCID-S from Bacillus sphaericus 1593 M. *Indian J Malariol* 1985 Dec;22(2):71-5. PMID: 2869986
https://pubmed.ncbi.nlm.nih.gov/2869986/

ABSTRACT

The efficacy of three experimental formulations of *Bacillus sphaericus* 1593M viz, HIL-8 (wettable powder), HIL-9 (dust formulation with 5% a.i.) and HIL-10 (dust formulation with 33% a.i.) were evaluated against *Anopheles* and *Culex* larvae in the laboratory and under field conditions. In the laboratory tests, 100% mortality was achieved against *Culex quinquefasciatus* II and IV instar larvae in 48 hours, with all the three formulations used at the levels of 5-25 mg a.i./sq. ft. With the formulation HIL-9 which was chosen for its efficacy against anophelines, as dust formulation, the larvicidal effect was demonstrated against *A. culicifacies* within 24 hours.

In field trials, the difference between the two formulations HIL-8 and 9 against anopheline larvae was clearly demonstrated. HIL-9 fared much better and in several instances high mortality (>90%) of *Anopheles* larvae was maintained up to one week. With *Culex*, the high organic pollutants of the habitats lowered the persistence of BIOCID-S.

58. Sharma RC, Yadav RS, **Sharma VP**. Field trials on the application of expanded polystyrene (EPS) beads in mosquito control. *Indian J Malariol* 1985 Dec;*22*(2):107–9. PMID: 3830745 https://pubmed.ncbi.nlm.nih.gov/3830745/

59. **Sharma VP**, Chandrahas RK, Nagpal BN, Srivastava PK. Follow up studies of malaria epidemic in villages of Shahjahanpur District, U.P. *Indian J Malariol* 1985 Dec;*22*(2):119–21.PMID: 2869985 https://pubmed.ncbi.nlm.nih.gov/2869985/

60. Singh N, Nagpal BN, **Sharma VP**. Mosquitoes of Kutch, Gujarat. *Indian J Malariol* 1985 Jun;22(1):17–20. PMID: 2863183 https://pubmed.ncbi.nlm.nih.gov/2863183/

ABSTRACT

Fourteen species of mosquitoes belonging to three genera i.e., *Anopheles*, *Culex* and *Aedeomyia* were collected during February-March, 1984 from nine Talukas of Kutch (Gujarat). *Anopheles aconitus*, *A. jamesi*, *A. pulcherrimus* and *A. sundaicus* were collected for the first time from this region. The previously recorded species *Anopheles barbirostris* was not found.

61. Malhotra MS, Shukla RP, **Sharma VP**. Studies on the incidence of malaria in Gadarpur town of Terai, Distt. Nainital, U.P. *Indian J Malariol* 1985 Jun; *22*(1):57-60.PMID: 4029459 https://pubmed.ncbi.nlm.nih.gov/4029459/

62. **Sharma VP**, Uprety HC, Srivastava PK, Chandrahas RK. Studies on malaria transmission in hutments of Delhi. *Indian J Malariol* 1985 Dec;*22*(2):77–84. PMID: 383074
https://pubmed.ncbi.nlm.nih.gov/3830748/

ABSTRACT

Parasitological surveys in the itinerant labour camps of Delhi revealed that malaria was one of the most common causes of morbidity. *P. vivax* cases start early in spring and reach high numbers in August-September. During the same period, a sudden spurt in falciparum malaria results in high morbidity due to falciparum and vivax malaria. In later months, the incidence of *P.vivax* goes down but falciparum malaria remains at that level till the onset of extreme winter. *A. stephensi* was incriminated as the vector in September 1983. Studies brought out the importance of hutments in the epidemiology of malaria in Delhi.

63. Nagpal BN, Sharma VP. Tree hole breeding and resting of mosquitoes in Orissa. *Indian J Malariol* 1985 Dec;22(2):115–7 PMID: 2869984
https://pubmed.ncbi.nlm.nih.gov/2869984/

Titles: A-Z

1986

64. Grinberg LN, Nooshtaev DA, Soprunov FF, Choudhury DS, Devi U, **Sharma VP**. Biochemical method for the detection of chloroquine resistance in P. falciparum. *Indian J Malariol* 1986 Jun;*23*(1):49–53. PMID: 3530830
https://pubmed.ncbi.nlm.nih.gov/3530830/

ABSTRACT

WHO *in vivo* and *in vitro* tests are available for detection of chloroquine resistance in *P. falciparum*. Nooshtaev *et al.* (1982) showed that chloroquine resistance in *P. berghei* could be assessed by the measurement of the change in pH of the media due to the production of lactic acid by the intraerythrocytic parasites as a result of glycolysis.

In the present study it was possible to demonstrate the applicability of this biochemical test for the detection of chloroquine resistance in *P. falciparum*. Hence this test can be used in parallel with WHO *in vitro* test for determination of chloroquine resistance.

65. **Sharma VP**, Sharma RC, Gautam AS. Bio-environmental control of malaria in Nadiad, Kheda district, Gujarat. *Indian J Malariol* 1986 Dec;*23*(2):95–117 PMID: 2883034
https://pubmed.ncbi.nlm.nih.gov/2883034/

ABSTRACT

A study on the bio-environmental control of malaria was launched in Nadiad taluka villages (Gujarat) in 1983. The area was endemic for malaria with high incidence of falciparum malaria. Insecticidal spraying to interrupt transmission did not produce desired results. Simple and age old methods of source reduction and biological control with the active involvement of communities through health education, and prompt case detection and radical treatment were used to combat malaria in 21 villages with 60,000 population. In 2 years malaria incidence was reduced to low levels. Mosquito densities in general and that of *A. culicifacies* in particular were greatly reduced. Reduction in the incidence of malaria was substantiated by reduction of spleen enlargement in children and low seropositivity rate. Fish culture, forestry schemes, improved chulahs, and soak pits etc., were introduced to improve the environment and village economy. The feasibility of a holistic approach to malaria control was demonstrated.

66. **Sharma VP**, Sharma RC. Cost effectiveness of the bio-environmental control of malaria in Kheda district, Gujarat. *Indian J Malariol* 1986 Dec;*23*(2):141–5.PMID: 2883031
https://pubmed.ncbi.nlm.nih.gov/2883031/

67. Kumar, Ramesh SN, Rao, MA, Ansari RK, Srivastava RA, **Sharma VP**. Feasibililty of IHA and ELISA in seroepidemiology of malaria. *Indian J Malariol* 1986;23:75–80. PMID: 3552760
https://pubmed.ncbi.nlm.nih.gov/3552760/

ABSTRACT

The IHA and ELISA tests were assessed for their suitability for seroepidemiological studies in malaria. The IHA test was done using antigen prepared from blood obtained from *P. knowlesi* infected monkeys. For ELISA, *in vitro* cultivated *P. falciparum* served as the source of antigen. The blood samples were collected on filter paper from three different areas with known high, medium and low prevalence of malarial infection. From each area samples were collected in the non-transmission season as well during peak transmission of *P. vivax* and *P. falciparum*. The results indicate that both the IHA and ELISA mean titres correlate well with SPR in the non-transmission period. Such a correlation is lacking in other periods. The expected age-related increase in antibody titres was evident only with ELISA and not IHA. In the peak transmission period of *P. vivax* and *P. falciparum*, the antibody titres were lower than in the non-transmission period, in areas with high prevalence of malarial infection. The significance of findings in relation to the seroepidemiology of malaria is discussed.

68. Dua VK, Brohult J, Ericsson O, **Sharma VP**. High performance liquid chromatographic determination of chloroquine in finger tip blood dried on filter paper: sample handling problems. *Indian J Malario.* 1986 Dec;*23*(2):151–4.PMID:3569621 https://pubmed.ncbi.nlm.nih.gov/3569621/

69. **Sharma VP**, Chandrahas RK, Ansari MA, Srivastava PK, Razdan RK, Batra CP, Raghuvendra K, Nagpal BN, Bhalla SC, Sharma GK. Impact of DDT and HCH spraying on malaria transmission in villages with DDT and HCH resistant Anopheles culicifacies. *Indian J Malariol* 1986 Jun;*23*(1):27–38. PMID:2428678
https://pubmed.ncbi.nlm.nih.gov/2428678/

ABSTRACT

The impact of spraying DDT and HCH on *A. culicifacies* resistant to DDT and HCH was assessed in Loni PHC, Ghaziabad, U.P. Monitoring of entomological and parasitological indices revealed that correct insecticidal dosage application and increasing the insecticidal coverage brought about significant reduction in vector densities and the incidence of malaria. The study also showed that there was no advantage of enhancing HCH dosage from 200 to 500 mg/m² and that DDT performed better in this area.

70. **Sharma VP**, Sharma GK, Ansari MA, Mittal PK, Razdan RK, Batra CP. Impact of malathion thermal fogging on mosquito populations in Delhi and its place in malaria control. *Indian J Malariol* 1986Jun;*23*(1):65–7.PMID:3758441 https://pubmed.ncbi.nlm.nih.gov/3758441/

71. Nagpal BN, **Sharma VP**. Incrimination of Anopheles culicifacies as vector of malaria in Orissa. *Indian J Malariol* 1986 Jun;*23*(1):57–9. PMID:3530831. https://pubmed.ncbi.nlm.nih.gov/3530831/

72. **Sharma VP**. Intensive agriculture and its impact on vector-borne disease. *Proc. Indian Nat. Sci Acad* 1986; B *51*(1):205–208. https://insa.nic.in/writereaddata/UpLoadedFiles/PINSA/Vol52B_1986_1_Art17.pdf

ABSTRACT

Introduction of high yielding varieties of crops, increased use of pesticides and fertilizers, increase in irrigation and the cropped area, and improved post-harvest technology were some of the important components of intensive agriculture in India which resulted in the increase in food production. But then there have also been increased incidences of a few vector borne diseases, mainly due to Increase in irrigation, misuse of insecticides, paddy cultivation and movement of labour and their unhygienic living conditions may have also contributed towards this increase.

73. Ansari, MA, **Sharma VP,** Razdan RK, Batra CP. Malaria situation in Meerut district villages U.P. *Indian J Malariol* 1986; 23: 147–150. PMID:2883032 https://pubmed.ncbi.nlm.nih.gov/2883032/

74. **Sharma VP**. Malaria: Eradicating Mosquitoes without insecticides – Gujarat shows the bio-environmental (and profitable) way. *Sci. Age* 1986; *4*(8):49–54.

75. **Sharma VP**, Mehrotra KN. Malaria resurgence in India: a critical study. *Soc Sci Med* 1986;*22*(8):835–45.PMID:3749959DOI:10.1016/0277-9536(86)90238-8. https://pubmed.ncbi.nlm.nih.gov/3749959/

ABSTRACT

In 1953, the Indian National Malaria Control Programme (NMCP) was started. Encouraged by the results, and the fact that insecticide resistance in vector species may evolve and become an obstacle, in 1958 a control programme was converted to the National Malaria Eradication Programme (NMEP). By 1964, malaria was eradicated from 88% of the area and it was in the advanced stage of spraying in the remaining parts. At that time, focal outbreaks that occurred in 1965 and increased in later years, could not be contained due to the shortages of DDT. As a result, large areas in consolidation and maintenance phases were reverted to the attack phase. Besides, the infrastructure in general health services was not adequate and mature enough to take up surveillance and vigilance. This produced a large number of secondary cases due to the re-introduction and relapse of malaria. Added to this was the problem of urban malaria, the control of which was the responsibility of local bodies. Malaria cases increased in towns, and started diffusing to the rural areas, due to inadequate staff and the shortages of malarial larvicidal oil (MLO). Later, it turned out, that while it was technically feasible to eradicate malaria from 91% of the population, the strategy of indoor spraying of DDT to interrupt transmission did not succeed in 9.0% of the population, despite more than 12-14 years of regular spraying. During the years of resurgence, there was no research support to the programme, so that technical problems were not properly appreciated, understood and tackled. The reservoir of parasites that were present throughout the country started multiplying and spreading to newer areas due to the presence of vectors in high densities. Thus malaria resurged and re-established itself even in areas that were at one time freed from the disease. The analysis of the pattern of malaria resurgence revealed that malaria outbreaks preceded the true problem of insecticide resistance. It is noteworthy to mention that malaria resurgence occurred in towns where the control measures were non-insecticidal and in regions which were not under the influence of insecticide-resistant vectors. The study also revealed that resurgence occurred before the introduction of high-yielding varieties programme in the country, and had no relationship to either the cotton or rice growing or intensive agriculture.

76. Ansari MA, **Sharma VP,** Razdan RK, Batra CP. Malaria situation in Meerut district villages (U.P.) *Indian J Malariol* 1986 Dec; 23(2):147–50. PMID:2883032 https://pubmed.ncbi.nlm.nih.gov/2883032/

77. Ansari MA, **Sharma VP**, Batra CP, Razdan RK, Mittal PK. Village scale trial of the impact of deltamethrin (K-othrine) spraying in areas with DDT and HCH resistant Anopheles culicifacies. *Indian J Malariol* 1986 Dec;*23*(2):127–31.PMID:3569620 https://pubmed.ncbi.nlm.nih.gov/3569620/

ABSTRACT

A synthetic pyrethroid Deltamethrin (trade name K- othrine) with residual toxicity was sprayed in malaria endemic village with vector *A. culicifacies* resistant to DDT and HCH. The spraying was carried out @ 12.5 mg/m² and compared with HCH spraying @ 200 mg/m². Results of the 3 rounds sprayed in both the villages revealed that K-othrine spraying suppressed the vector populations and greatly reduced malaria transmission. In contrast spraying of HCH did not produce satisfactory results in either reducing the vector densities or the incidence of malaria.

1987

78. **Sharma VP**, Dua VK, Sharma SK. Bio-environmental control of industrial malaria. 1987 *ICMR Bulletin*, 17(7): 59–62.

79. **Sharma VP**. Community based malaria control in India. *Parasitology Today 1987; 3*(7):222–226 DOI: 10.1016/0169-4758(87)90066-4 PMID:**15462962** https://pubmed.ncbi.nlm.nih.gov/15462962/

ABSTRACT

India launched its National Malaria Eradication Programme (NMEP) in 1958, designed to interrupt transmission with residual insecticide spraying coupled with chemotherapy and anti-larval methods in urban areas. The strategy produced spectacular results. By 1965 malaria was reduced from around 75 million cases annually (with 800 000 deaths) to about 100 000 cases per year. Unfortunately, even under the subsequent maintenance phase, malaria began to resurge in many foci, and in 1976 the NMEP reported 6.4 million

parasite positive cases. In this article, V.P. Sharma looks at some of the problems faced by the NMEP strategy, and discusses the alternative community-based approach now being evaluated in the northwestern state of Gujarat.

80. Roy KB, Yajnik V, Roy A, **Sharma VP**. Detection of Plasmodium vivax in human blood using synthetic DNA probe. *Indian J Malariol* 1987 Jun;*24*(1):65–9. PMID:3326754 https://pubmed.ncbi.nlm.nih.gov/3326754/

ABSTRACT

Oligonucleotides representing repetitive sequences in the genes coding for CS proteins of *P. falciparum* and *P. vivax* have been synthesised, radiolabelled and tested as probe in DNA-DNA hybridization assay on nitrocellulose filters. These show desirable specificity and the vivax probe was used in a simple dot-blot assay for detecting parasites in patients' blood.

81. Subbarao SK, Vasantha K, Adak T, **Sharma VP**, Curtis CF. Egg-float ridge number in Anopheles stephensi: ecological variation and genetic analysis. *Med Vet Entomol* 1987 Jul;*1*(3):265-71. PMID:2979540 doi:10.1111/j.1365-2915.1987.tb00353.x. https://pubmed.ncbi.nlm.nih.gov/2979540/

ABSTRACT

Eight Indian laboratory stocks of Anopheles stephensi Liston could be grouped into three categories with, respectively, 14-22, 12-17 and 9-15 ridges on the egg-floats. The mode number of ridges among the eggs laid by individual females in these stocks was 16-19, 13-16 and 10-14, respectively. The category with the highest egg-float ridge number corresponded with the type-form and the lowest with var. mysorensis Sweet and Rao; the new egg-float category with ridge number modes of thirteen to sixteen was designated as 'intermediate'. All three forms, i.e. type-form, intermediate and myosorensis were observed in semi-urban areas while only intermediate and mysorensis were seen in rural areas. Breeding experiments indicated no post-copulatory barriers between the populations. Likelihood analysis of the results of crosses and back crosses indicated that variation in ridge number is controlled by more than one genetic factor. The stocks with different ridge numbers are best considered as 'ecological variants'.

82. Joshi H, Raghavendra K, Subbarao SK, **Sharma VP**. Genetic markers in malaria patients of Delhi. *Indian J Malariol* 1987 Jun; *24*(1):33–8. PMID:3481577
https://pubmed.ncbi.nlm.nih.gov/3481577/

ABSTRACT

A total of 355 subjects affected with malaria and 305 negative controls from metropolitan Delhi were investigated with regard to ABO blood group, Haptoglobin, Haemoglobin and Glucose-6-phosphate dehydrogenase markers. Except for the Hp system no other marker studied has shown significant difference between the two groups with regard to the distribution pattern of polymorphic forms. A significant increase in the incidence of functional ahaptoglobinemia (Hp 0–0) was observed in the malaria positive group. G-6-PD deficiency was detected in two individuals.

83. Kumar R, Bharadwaj Y, Ansari MA, Razdan RK, **Sharma VP**. Immunofluorescence test in the seroepidemiology of malaria around Delhi. *Indian J Malariol* 1987 Dec;*24*(2):119–24. PMID: 3330712
https://pubmed.ncbi.nlm.nih.gov/3330712/

84. Sinha S, Choudhury DS, Ghosh SK, Devi CU, **Sharma VP**. In vitro chloroquine resistant Plasmodium falciparum in Calcutta and its sensitivity to qinghaosu(artemisitene). *Indian J Malariol* 1987 Dec;*24*(2):107–9. PMID: 3330710
https://pubmed.ncbi.nlm.nih.gov/3330710/

ABSTRACT

In vitro sensitivity of *Plasmodium falciparum* from Calcutta was assessed against chloroquine and qinghaosu by micro *in vitro* test. Six out of 28 (21%) specimens were resistant to chloroquine. All the 17 specimens tested were susceptible to qinghaosu. This is the first report of chloroquine resistance from Calcutta.

85. Biswas S, Saxena QB, Roy A, **Sharma VP**. Isolation of different erythrocytic stages of Plasmodium falciparum and synchronization in culture. *Indian J Malariol* 1988 Jun;*25*(1):7–10. PMID:3072222
https://pubmed.ncbi.nlm.nih.gov/3072222/

86. Choudhury DS, **Sharma VP**, Bhalla SC, Aggarwal SS, Das SK. Malaria prevalence in patients attending primary health centres in ten districts of Uttar Pradesh. *Indian J Malariol* 1987 Jun;*24*(1):79–83. PMID:3440496
https://pubmed.ncbi.nlm.nih.gov/3440496/

87. Roy A, **Sharma VP**. Microdot ELISA: development of a sensitive and rapid test to identify the source of mosquito blood meals. *Indian J Malariol* 1987 Jun;*24*(1):51–8. PMID: 2894328
https://pubmed.ncbi.nlm.nih.gov/2894328/

ABSTRACT

A rapid and sensitive microdot ELISA on nitrocellulose membrane for visual identification of the source of mosquito blood meal (MBM) has been developed. In this method MBM collected on filter papers are eluted with PBS and then spotted onto a nitrocellulose (NC) membrane, the remaining protein sites are blocked, the NC is then soaked in a solution of peroxidase labelled anti (Ig) human antibody solution. Finally, the immune complexes are made visible by incubation with substrate, 4 chloro-l-naphthol.

The method is highly sensitive, reproducible and suitable for the rapid identification of hosts of haematophagous insects in field laboratories. The technique is simple and does not require expensive equipment.

88. Choudhury DS, Sinha S, Ghosh SK, Devi CU, **Sharma VP**. Report of a case of P. falciparum malaria resistant to chloroquine and combination of sulfalene and pyrimethamine in Delhi. *Indian J Malariol* 1987 Jun;*24*(1):95–6. PMID:3326756 https://pubmed.ncbi.nlm.nih.gov/3326756/

89. Subbarao SK, Vasantha K, Adak T, **Sharma VP**. Seasonal prevalence of sibling species A and B of the taxon Anopheles culicifacies in villages around Delhi. *Indian J Malariol* 1987 Jun;*24*(1):9–15. PMID: 3440498
https://pubmed.ncbi.nlm.nih.gov/3440498/

ABSTARCT

Two riverine villages, Basantpur, Faridabad district (Haryana) and Arthala, Ghaziabad district (Uttar Pradesh) and a non-riverine village, Mandora, Sonepat district (Haryana) were surveyed for two years to examine the seasonal variations in the prevalence of sibling species A and B of *Anopheles culicifacies*. Species A was predominant almost throughout the year. The proportion of species B increased after the onset of monsoons i.e., July onwards and the maximum observed was between September–October. The proportion of species B in Mandora varied between 5–10% while in riverine villages it varied between 10–60%. In Basantpur in September–October the proportion of species B exceeded species A while in Arthala it was between 25–35%. The high proportion of species B observed in Basantpur was correlated with extensive breeding observed in riverbed pools in post-monsoon months. Several species A specimens were found positive for sporozoites in Arthala and Basantpur thus establishing the role of species A in the transmission of malaria.

90. Chandrahas RK, **Sharma VP**.Small-scale field trials with polystyrene beads for the control of mosquito breeding. *Indian J Malariol* 1987 Dec; *24*(2):175–80. PMID: 3452551 https://pubmed.ncbi.nlm.nih.gov/3452551/

91. Nanda N, Dass CM, Subbarao SK, Adak T, **Sharma VP**. Studies on the development of Plasmodium vivax in Anopheles subpictus. *Indian J Malariol* 1987 Dec;*24*(2):135–42. PMID: 3330714. https://pubmed.ncbi.nlm.nih.gov/3330714/

92. Sharma RC, Gupta DK, **Sharma VP**. Studies on the role of indigenous fishes in the control of mosquito breeding. *Indian J Malariol* 1987 Jun;*24*(1):73–7. PMID: 2894329 https://pubmed.ncbi.nlm.nih.gov/2894329/

93. **Sharma VP,** Nagpal BN. Survey of Mosquito Fauna of Northastern Region of India . *Indian J Malariol* 1987 Dec;24:143–149. PMID: 2898388 https://pubmed.ncbi.nlm.nih.gov/2898388/

94. Joshi H, Raghavendra K, Subbarao SK, **Sharma VP**. Three new electrophoretic allelomorphs of glucose-6-phosphate dehydrogenase. *Indian J Malariol* 1987 Jun; *24*(1):29–31.PMID: 3440495 https://pubmed.ncbi.nlm.nih.gov/3440495/

ABSTRACT

Three new G-6-PD variants, one fast moving with 110% and two slow moving variants with 90% and 50% electrophoretic mobilities were observed. Enzyme activity studies showed that the enzyme with 110% mobility was labile and this enzyme was designated as G-6-PD"Garhwal". Pedigree analysis of variants G-6-PD 50% mobility in two families of Buksa tribe indicated its X-linked inheritance and that it is an allelomorph of the normal B-type prevailing in the population. This variant is designated as G-6-PD "Haldwani" and the 90% mobility variant as G-6-PD "Delhi".

1988

95. Subbarao SK, Vasantha K, Raghavendra K, **Sharma VP**, Sharma GK. Anopheles culicifacies: siblings species composition and its relationship to malaria incidence. *J Am Mosq ControlAssoc* 1988 Mar;*4*(1):29–33. PMID: 3057115
https://pubmed.ncbi.nlm.nih.gov/3057115/

ABSTRACT

Entomological and epidemiological surveys in May, August and November 1985 and March 1986 were conducted in villages in Bulandshahr, a western district in Uttar Pradesh and in three eastern districts, Jaunpur, Ballia and Saran. In Bulandshahr, Anopheles culicifacies sibling species A and B were found, with a predominance of species A. Both Plasmodium vivax and P. falciparum were present and the malaria incidence remained high (SPR, 6-50%) indicating an active transmission. In contrast, in three eastern districts predominance of species B with an occasional occurrence of species A was observed. Malaria cases were almost absent in Ballia and Saran and in Jaunpur 10.3% slide positivity rate was observed in May but in later surveys cases were considerably lower (SPR, 0.5-2.9%) indicating the absence of indigenous transmission. In the eastern districts, malaria parasites are regularly brought in from endemic areas by the migrant labor population. Although An. culicifacies s.l. occurs in both the areas, the difference in malaria incidence appears to be due to the difference in the composition of the sibling species which is, the predominant presence of species A in the western district and its absence in eastern districts. This indicates that species A is responsible for active malaria transmission while species B is not.

96. Dua VK, **Sharma VP**, Sharma SK. Bio-environmental control of malaria in an industrial complex at Hardwar (U.P.), India. *J Am Mosq Control Assoc* 1988 Dec;*4*(4):426–30. PMID: 3225561
https://pubmed.ncbi.nlm.nih.gov/3225561/

ABSTRACT

A study on the bio-environmental control of industrial malaria was launched at Bharat Heavy Electricals Ltd., the country's foremost industrial complex. Malaria was a serious problem on the campus of the complex and routine methods of malaria control by providing screened doors, larviciding, fogging, limited spraying in the unauthorized colonies and chemotherapy were not effective. The project staff diverted the existing resources to reduce mosquito breeding sites by using fly ash to fill low lying areas, borrow pits and ditches, etc.; cleaning blocked drains and improving drainage by constructing cemented drains, mosquito-proofing overhead water storage tanks, improving surveillance and chemotherapy and introducing developmental schemes to make it a holistic process. The entire campus was brought under the alternate strategy during a 5 month period. In less than one year indigenous transmission was interrupted and the areas brought under maintenance at a cost of US +28,000. The study showed that in this instance malaria control should first be based on source reduction rather than insecticidal methods.

97. Sharma RC, **Sharma VP**. Epidemiological implications of population migration: Part I. Imported malaria in Kheda district, Gujarat. *Indian J Malariol* 1988 Dec;*25*(2):113–6. PMID: 3077367. https://pubmed.ncbi.nlm.nih.gov/3077367/

98. Sharma RC, Sharma VP.Epidemiological implications of population migration: Part II. Evidence of chloroquine resistant Plasmodium falciparum malaria inKheda district,Gujarat. *Indian J Malariol* 1988 Dec;*25*(2):117–118. PMID:3077368 https://pubmed.ncbi.nlm.nih.gov/3077368/

99. Joshi H, Vasantha K, Subbarao SK, **Sharma VP**. Host feeding patterns of Anopheles culicifacies species A and B. *J Am Mosq Cont Assoc* 1988 Sep;*4*(3):248–51. PMID: 3199114 https://pubmed.ncbi.nlm.nih.gov/3199114/

ABSTRACT

Countercurrent immunoelectrophoresis was used to assay bloodmeals to determine the host specificity of Anopheles culicifacies species A and B, collected from areas in Delhi, Uttar Pradesh and Bihar. Results indicated the predominantly zoophagic nature of species A and B with a relatively higher degree of anthropophagy for species A. Further, the human blood index was found to be related to the proportion of human and cattle population in an area. This study is significant because, of the two species only species A was incriminated as the vector of malaria in these areas.

100. Biswas S, Saxena QB, Ray A, **Sharma VP**. Isolation of different erythrocytic stages of Plasmidium falciparum and synchronization in culture. *Indian J Malariol* 1988 Jun;*25*(1):7–10. PMID: 3072222 https://europepmc.org/article/med/3072222

ABSTRACT

Plasmodium falciparum in culture has a heterogeneous population of different stages. Erythrocytes which harbour parasites have different densities; isolation of the various stages has been done by taking advantage of this difference. From healthy culture different stages were isolated by stepwise Percoll density gradient method as 30, 45, 50 and 65 per cent. Purity of parasite preparations was checked by microscopic examination. Parasitized erythrocytes having homogeneous stages were put for synchronous culture with 45 per cent Percoll top layer (45T) and pellet after 65 per cent (65B) gradient. Parasitaemia of the culture was monitored after every 24 hours. Synchronicity was maintained in both the sets upto 48 hours. Gradient was repeated after 48 hours to 'fine tune' the synchronization. Two sets of culture with 45T and 65B give more yield of homogeneous stages. No alteration of parasite viability at various stages could be detected.

101. Singh N, **Sharma VP**, Shukla MM, Chand G. Malaria outbreak in Kundam block, district Jabalpur (M.P.) *Indian J Malariol* 1988 Jun;*25* (1):41–9. PMID: 3072220 https://pubmed.ncbi.nlm.nih.gov/3072220/

ABSTRACT

An outbreak of malaria was investigated in 1987 in Kundam block of Jabalpur district (M.P.). In these villages 4 rounds of HCH spraying followed by intensive surveillance and one round of fever radical treatment (FRT) and mass radical treatment (MRT) was not effective in suppressing *P. falciparum* epidemic. *A. culicifacies*, *A. fluviatilis* and *A. annularis* densities remained high and so did the SPR (70%) and pf% (60–100). The need to apply a suitable replacement insecticide in conjunction with environmental modifications as a long term control strategy is suggested.

102. kumar R, Bharadwaj Y, Ansari MA, Razdan RK, Batra CP, **Sharma VP.** Reliability of the fluorescent antibody test in the measurement of malaria in thecommunity. *Indian J Malariol* 1988;*25*(2):73–76. PMID: 3077370.
https://pubmed.ncbi.nlm.nih.gov/3077370/

ABSTRACT

A total of 1960 serum samples were collected for malarial antibody assay as well as smear examination in the month of February and March 1987 (non-transmission season). All the villages were under active surveillance by the Malaria Research Centre. The infection rates of malaria as calculated for each village from the serological data, correlated well with the number of malaria cases seen in the age group 1-4 years during the year 1986-87. The significance of the findings is discussed and it is suggested that serology should be accepted at the national level for surveillance of malaria.

103. Subbarao SK, Vasantha K, **Sharma VP**. Responses of Anopheles culicifacies sibling species A and B to DDT and HCH in India: implications in malaria control. *Med Vet Entomol* 1988 Jul; *2*(3):219–23. PMID: 2485170 doi:10.1111/j.1365-2915.1988.tb00186.x.
https://pubmed.ncbi.nlm.nih.gov/2485170/

ABSTRACT

Differential responses of Anopheles culicifacies Giles sibling species A and B to DDT were evident from higher survival rate of species B in laboratory bioassays and greater proportions of species B in DDT-sprayed villages of northern India, compared with those under HCH pressure. Both species A and B have become almost completely resistant to HCH in this area due to regular house-spraying with HCH for about the last 10 years. Because species A predominates in northern India, where it has been incriminated as an important vector of malaria, and species A is more susceptible than species B to DDT, it is suggested that DDT would control malaria transmission more effectively than HCH in this situation. Monitoring of insecticide resistance in species A is therefore recommended as the basis for future choice of insecticides to be used by the National Malaria Eradication Programme.

104. Subbarao SK, Adak T, Vasantha K, Joshi H, Raghvendra K, Cochrane AH, Nussenzweig RS, **Sharma VP.** Susceptibility of Anopheles culicifacies species A and B to Plasmodium vivax and Plasmodium falciparum as determined by immunoradiometric assay. *Trans R Soc Trop Med Hyg* 1988; *82*(3):394–7. PMID: 3068854 doi: 10.1016/0035-9203(88)90132-0.
https://pubmed.ncbi.nlm.nih.gov/3068854/

ABSTRACT

We have used a two-site immunoradiometric assay and species-specific antisporozoite monoclonal antibodies to determine the relative roles that sibling species A and B of the Anopheles culicifacies complex play in malaria transmission in western Uttar Pradesh, India. The results unequivocally establish species A as the primary vector of both Plasmodium vivax and P. falciparum in this area. Our results indicate active transmission of P. vivax from May to October and of P. falciparum from August to December. The identification of species A as the primary malaria vector in northern India will now allow suitable malaria control strategies to be designed.

105. Saxena QB, Biswas BS, **Sharma VP**. Status of Natural killer activity in the peripheral blood of P. vivax and P. falciparum malaria parasite. *Indian J. Malariol 25*(1):11–15. PMID: 3072218. https://pubmed.ncbi.nlm.nih.gov/3072218/

ABSTRACT

Status of natural killer activity (NK) was studied in peripheral blood lymphocytes (PBL) of patients suffering from *Plasmodium falciparum* and *Plasmodium vivax* malaria. The levels of NK activity in patients of *P. falciparum* malaria were not significantly different from the NK levels in healthy controls. However, there was a significant decrease in the levels of NK activity in patients suffering from *P. vivax* malaria. Further the decrease in NK activity in *P. vivax* cases could not be correlated with the age, sex and the degree of parasitaemia of the blood donors.

106. Subbarao, Saral K, Vasantha K, **Sharma VP**. Studies on the crosses between sibling species of the Anopheles culicifacies complex. *J Heredity 79*(4):300-302.
https://academic.oup.com/jhered/article-abstract/79/4/300/786236?redirectedFrom=fulltext

ABSTRACT

Generally, the crosses carried out between the three known sibling species of the Anopheles culicifacies complex were fertile. However, when certain strains of species B were used as the female parents, the crosses were totally sterile, whereas with other strains of species B, low fertility was observed. Also, the cross between the C female and the A male was sterile. Although unidirectional hybrid male sterility was reported in crosses between species A and species B, bidirectional hybrid male sterility was observed between species A and B and also between species A and C, and bidirectional hybrid male fertility was observed in crosses between species B and C. In the sterile hybrid males, varying degrees of development of reproductive organs were observed. The hybrid females from all of the crosses were fertile. In the "choice" mating experiments species A and B exhibited assortative matings, whereas species C showed preference to mate with species B. The possible reproductive isolating mechanisms operating in the field were considered and it was concluded that ethological isolation probably is the chief operating force.

107. Ansari MA, **Sharma VP**, Razdan RK, Batra CP, Mittal PK. The value of spraying cattlesheds in a control programme. *Indian J Malariol* 1988 Jun;*25*(1):17–22. PMID: 3243362

https://pubmed.ncbi.nlm.nih.gov/3243362/

ABSTRACT

Spraying of DDT was carried out in (i) houses and (ii) houses and cattlesheds in Muradnagar PHC, Distt. Ghaziabad (U.P.). The main vector *A. culicifacies* is resistant to DDT and HCH in this region. The entire PHC was divided into 4 zones of about 30 thousand population each. Villages of zone I were held as control and sprayed by NMEP with HCH @ 200 mg/sq.m while in zone II and IV only houses were sprayed with DDT @ 1 and 2 gm/sq.m respectively. In zone III DDT was sprayed @ 1 gm/sq.m in both cattlesheds and houses. Results of the comparative studies revealed that spraying the houses alone or houses and cattlesheds did not produce any significant difference in either the reduction in vector density or the transmission of malaria. The impact of spraying DDT @ 1gm or 2 gm/sq.m also produced non-significant results. The study brought out the importance of spraying the houses alone and that spraying of cattlesheds is not necessary in a control programme.

108. Adak T, Subbarao SK, **Sharma VP**, Rao SRV. X-linkage of malic enzyme in Anopheles culicifaciesspeciesB. *J Hered* 1988 Jan-Feb;*79*(1):37–9. DOI: 10.1093/oxfordjournals.jhered.a110442 PMID: **3367035**
https://pubmed.ncbi.nlm.nih.gov/3367035/

ABSTRACT

A survey for malic enzyme (Me) in laboratory strains of species A and species B of Anopheles culicifacies had uncovered two electrophoretic variants, slow and fast, in two strains of species B. Genetic analysis revealed the two variants to be codominant alleles segregating at a locus, Me, which is sex linked. Because of the XX-XY sex determining mechanism, in F1 females, two electromorphs, viz., slow and fast, were observed, whereas in males only one electromorph of maternal origin was seen. Linkage experiments with another X-linked mutant, white eye (w), indicated the map distance between the two loci to be 9.52 +/- 0.86.

1989

109. N Singh, MM Shukla, **Sharma VP**, BN Saxena. A Focus of High degree Chloroquine Resistant P. falciparum in Mandla District(M.P). *Indian J Malariol* 1989 Mar;*26*(1):45–51.PMID: 268063.
https://pubmed.ncbi.nlm.nih.gov/2680635/

ABSTRACT

A study on the bioenvironmental control of malaria was launched in Bizadandi block (Mandla district, M.P.) in May 1986. Besides intervention, using environmental management methods and larvivorous fishes, weekly surveillance and chloroquine administration at 25 mg/kg body weight was practiced. Studies during 1987 revealed that a large number of P. falciparum cases did not respond to the standard anti-malarial treatment. Therefore, systematic 28 day in vivo studies were taken up on the follow-up of P. falciparum cases after administration of 3 day course of 25 mg/kg body weight as per the WHO procedure. Results revealed a high proportion of drug resistant cases belonging

to RI (237), RII and RIII (182) category. In vivo studies on the sensitivity to metakelfin showed that some cases were resistant to this drug. There is an urgent need to eradicate this focus before it starts spreading to other areas.

110. N Singh, **V P Sharma**, AK Mishra, OP Singh. Bioenvironmental Control of Malaria in a Tribal area of Mandla District (M.P). *Indian J Malariol* 1989 Jun;*26*(2):103–20. PMID: 2571525.
https://pubmed.ncbi.nlm.nih.gov/2571525/

ABSTRACT

Bizadandi block of District Mandla was selected for demonstration of bio-environmental control of malaria. The project presently covers 80 experimental villages and 12 control villages. In this area, because of indifferent surveillance and spraying in the past (from 1978-86) the API was reported low and the parasite reservoir in the community had built up over the years. At the outset of the study the malaria prevalence was high with preponderance of P. falciparum. Densities of A. culicifacies were very high and A. fluviatilis was also present. P. falciparum predominated in both experimental and control area during 1988 than in 1987. Annual blood examination rate (ABER) was 73.6 and 57.5 and annual parasite incidence (API) was 114.7 and 228.0 in experimental and control villages in 1987, while in 1988, ABER and API was 63 and 73 and 112 and 316 in experimental and control, respectively. There was constant stabilization of Pf in neighbouring blocks in 1988 while in experimental areas Pf percentage has come down appreciably during March to June. It is very alarming to note that the parasite reservoir in control villages was sufficient to maintain active transmission even when antimalarial activities are at a peak. The application of residual insecticides like DDT and HCH has no tangible impact on the reduction in vector densities and the transmission of malaria. Even if a replacement insecticide like malathion is used it may produce very limited impact on vector densities in such forested zones. Thus, there is an urgent need to intensify integrated malaria control operations in the area on long term basis.

111. DK Gupta, RC Sharma, **Sharma VP**. Bioenvironmental Control of Malaria Linked with Edible Fish Production In Gujrat. *Indian J Malariol* 1989 Mar;*26*(1):55–9. PMID: 2806688.
https://pubmed.ncbi.nlm.nih.gov/2806688/

112. Sinha S, Dua VK, **Sharma VP**. Chloroquine resistant imported Plasmodium falciparum in an industrial complex at Hardwar (U.P.) *Indian J Malariol* 1989 Jun; *26*(2):123–5.PMID: 2676617
https://pubmed.ncbi.nlm.nih.gov/2676617/

113. **Sharma VP**, Sharma RC. Community based bioenvironmental control of malaria in Kheda District, Gujarat, India. *J Am Mosq Control Assoc.* 1989 Dec;*5*(4):514–21. PMID: 2614400
https://pubmed.ncbi.nlm.nih.gov/2614400/

ABSTRACT

A study on the bioenvironmental control of malaria was launched in 1983 in Nadiad taluka, Gujarat, with help of village communities. The implementation of strategy resulted in the successful control of larval mosquitoes and reduction in the adult vector populations, and the impact was visible in the curtailment of malaria transmission in large rural areas. When compared with the residual spraying of insecticides under the National Malaria Eradication Programme, the alternate strategy was found feasible, socially acceptable, cost effective and brought about environmental improvement and awareness in the rural areas.

114. SK Ghosh, DS Choudhury, N Singh, **Sharma VP.** Drug Resistant P.falciparum in Madras and District Jabalpur. *Indian J Malario*l 1989 Jun;*26*(2):87–90. PMID: 2676619.
https://pubmed.ncbi.nlm.nih.gov/2676619/

ABSTRACT

WHO micro in vitro tests for chloroquine resistance in P. falciparum were carried out during November, 1987 in Madras city, Tamil Nadu and in Kundam PHC of Jabalpur district, Madhya Pradesh. Out of 6 samples tested from Madras city, 5 showed resistance to chloroquine. Likewise, out of 14 samples tested in Jabalpur, 12 (85.7%) showed resistance to chloroquine. All the 20 samples showed normal susceptibility to mefloquine.

115. Sinha S, Dua VK, **Sharma VP**. Efficacy of 5 day radical treatment of primaquine in Plasmodium vivax cases at the BHEL industrial complex, Hardwar (U.P.). *Indian J Malariol* 1989 Jun;*26*(2):83-6 PMID: 2676618
https://pubmed.ncbi.nlm.nih.gov/2676618/

ABSTRACT

Studies on 725 P. vivax infected patients at the Bharat Heavy Electricals Ltd. produced 6.9 per cent relapse rate after administration of radical treatment of primaquine / 15 mg daily for 5 days as followed under the National Malaria Eradication Programme. Maximum relapses were recorded in a female patient in spite of repeated radical treatment.

116. Ansari MA, **Sharma VP**, PK Mittal, RK Razdan, CP Batra. Evaluation of Bacillus Sphaericus to control Breeding of Malaria Vectors. *Indian J Malariol* 1989 Mar; *26*(1):25–31. PMID: 2806687.
https://pubmed.ncbi.nlm.nih.gov/2806687/

ABSTRACT

Bacillus sphaericus formulations (Solvay liquid 2362 and Abbott granules 2297) were tested in the laboratory and field for the control of mosquito breeding. Results of laboratory evaluation revealed that both formulations had good larvicidal activity against Culex quinquefasciatus, at 0.04 ml and 1 gm/sq m dosages respectively. Higher dosages at 5 ml liquid or 5 gm/sq m granules were required to control A. stephensi and A.

subpictus. A. culicifacies required still higher dosages of Solvay (25 ml/sq m) to achieve same levels of control whereas Abbott granules were not effective even at 20 gm/sq m.

117. **Sharma VP,** MA Ansari, PK Mittal, RK Razdan. Insecticide Impregnated Ropes as mosquito Repellent. *Indian J Malariol* 1989 Dec;*26*(4):179–85. PMID: 2636150. https://pubmed.ncbi.nlm.nih.gov/2636150/

118. Saxena QB, S.Biswas, **Sharma VP**. Interaction of Human natural killer Cells with Plasmodium-Infected Erythrocytes. *Experimental Parasitology* 1989 Aug;*69*:300–302. https://doi.org/10.1016/0014-4894(89)90077-5 https://pubmed.ncbi.nlm.nih.gov/2676579/

ABSTRACT

Ropes were impregnated with different dosages of deltamethrin and burnt throughout the night in human dwellings and cattlesheds. Smoke from smouldering ropes treated with various dose levels gradually saturated rooms and prevented the entry of mosquitoes. This method provided very good protection from mosquito bites including the principal vector of malaria, A. culicifacies. Results of ropes impregnated with 80 ppm deltamethrin were more consistent than at the lower dosage. The technique is indigenous, cost-effective, simple and appropriate for rural areas and does not require any special skills in its application.

119. Sinha S, Dua VK, **Sharma VP.** Malaria relapses and chloroquine resistanmce at the BHEL industrial complex, Hardwar, India. *Trans R Soc Trop Med Hyg* 1989 Sep-Oct;*83*(5):606. PMID: 2694499 doi: 10.1016/0035-9203(89)90369-6. https://pubmed.ncbi.nlm.nih.gov/2694499/

120. Singh N, **Sharma VP**. Persistent malaria transmission in Kundam block, district Jabalpur (M.P.). *Indian J Malariol* 1989 Mar;*26*(1):1-7. PMID: 2806685 https://pubmed.ncbi.nlm.nih.gov/2806685/

ABSTRACT

Malaria survey was undertaken in 7 villages of Kundam PHC from August 1987 to July 1988. Epidemiological findings revealed high spleen (20-70), child parasite (40-85) and infant parasite rates (20-75) in the area. P. falciparum was the predominant species and unchecked malaria transmission continued almost throughout the year. The study of monthwise distribution of positive cases and the period during which intensive intervention measures were undertaken revealed that despite an extra round of HCH and intensive chemotherapeutic measures, there was no marked decrease in the prevalence of malaria.

121. Joshi H, Subbarao SK, Raghavendra K, **Sharma VP**. Plasmodium vivax: enzyme polymorphism in isolates of Indian origin . *Trans R Soc Trop Med Hyg* 1989 Mar-Apr;*83*(2):179-81. PMID:2692226 DOI:10.1016/0035-9203(89)90634-2 https://pubmed.ncbi.nlm.nih.gov/2692226/

ABSTRACT

185 isolates of Plasmodium vivax were collected from patients visiting the malaria clinic run by the National Malaria Eradication Programme, Delhi, India. Percoll gradient centrifugation was used to concentrate P. vivax parasites from 0.4 to 0.5 ml of blood collected by finger prick. The parasite concentrate from each isolate was electrophoretically analysed for lactate dehydrogenase (LDH), NADP-dependent glutamate dehydrogenase (GDH), glucose phosphate isomerase (GPI) and adenosine deaminase (ADA). Variations were observed in GPI, GDH and ADA systems. Four electrophoretic forms of GPI and 5 each of GDH and ADA were observed. Electrophoretic mobilities of the different isoenzymic forms in P. vivax were identical to those reported for P. falciparum, indicating that the 2 species cannot be differentiated on the basis of electrophoretic patterns of the 4 enzyme systems studied.

122. Singh N, Mishra AK, **Sharma VP**. Radical treatment of vivax malaria in Madhya Pradesh, *India. Indian J Malariol* 1990 Mar;*27*(1):55-6. PMID:2200726 https://pubmed.ncbi.nlm.nih.gov/2200726/

123. Bhatt RM, Sharma RC, Yadav RS, **Sharma VP**. Resting of mosquitoes in outdoor pit shelters in Kheda district, Gujarat. *Indian J Malariol* 1989 Jun;*26*(2):75–81. PMID:2571526
https://pubmed.ncbi.nlm.nih.gov/2571526/

ABSTRACT

Outdoor resting habits of mosquitoes were studied in Kheda district, Gujarat using the artificial pit shelters. Studies revealed that mosquitoes prefer to rest in pit shelters and these habitats can be used for monitoring of mosquito populations and other ecological and behavioural studies

124. Yadav RS, Sharma RC, Bhatt RM, **Sharma VP**. Studies on the anopheline fauna of kheda District and species specific breeding habitats. *Indian J Malariol* 1989 Jun;*26*(2):65–74. PMID:2792472.
https://pubmed.ncbi.nlm.nih.gov/2792472/

ABSTRACT

Information on anopheline fauna of Kheda district in Gujarat dates back to 1950. Since then there have been vast ecological changes due to development projects and intensive irrigation. To study the anopheline fauna of Kheda district collections from 164 villages representing 7 talukas of the district were made. Sixteen anopheline species were recorded, of these 8 species were recorded for the first time. Maximum number of anopheline species (16) were recorded from canal irrigated area followed by 11 species from riverine area and 10 species from non-canal irrigated area. Four anopheline species namely An. subpictus, An. culicifacies, An. annularis and An. stephensi were predominant and constituted 99.9% of the total anophelines and rest of the 12 species accounted for 0.1%. In this paper, results of the study on mosquito ecology with particular emphasis on species specific breeding preferences, associations and frequency of distribution in various types of aquatic habitats have been reported.

125. Dua VK, Sharma SK, **Sharma VP**. Use of expanded polystyrene beads for the control of mosquitoes in an industrial complex at Hardwar, India. *J Am Mosq Control Assoc* 1989 Dec;*5*(4):614–5. PMID:2614417 https://pubmed.ncbi.nlm.nih.gov/2614417/

1990

126. Prasad R N, Sharma SN , Virk KJ , **Sharma VP.** Anopheline breeding in paddy fields and its relationship to growth of plants. *Mosq Borne Dis Buli* 1990;*7*(3):104–106. https://www.cabdirect.org/cabdirect/abstract/19910505893

ABSTRACT

Five anopheline species (Anopheles culicifacies, A. subpictus, A. annularis, A. nigerrimus and A. barbirostris) were found 'breeding' in rice fields in Shahjahanpur district, Uttar Pradesh, India, in July-November 1988. A. culicifacies, the main malaria vector of the area, was encountered only during the early phases of the paddy crop suggesting that by applying effective control measures during the early phases of paddy cultivation, the risk of malaria transmission can be overcome. There was an indirect correlation between the larval density of the anophelines and height of the rice plants.

127. RN Prasad, H. Prasad, KJ. Virk, and **Sharma VP**. Application of a simplified in-vivo test system for determining choroquine resistance in Plasmodium falciparum. *Bull World Health Organ* 1990;*68*(6):755–758. PMID:2073712. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2393168/

ABSTRACT

A simplified in-vivo test system was applied to detect chloroquine resistance in malaria patients in Shahjahanpur district (Uttar Pradesh) in India. In 27.6% of cases RIII resistance was observed. This in-vivo method is a simple and useful test for the early detection of chloroquine-resistant falciparum infections and for the management of these patients with alternative therapy.

128. RN Prasad , H Prasad, KJ Virk, **Sharma VP**. Dectection of multiple invasion of erythrocytes of Plasmodium vivax. *Trop Med Parasitol* 1990 Dec;*41*(4):437–8. PMID: 2075390.
https://pubmed.ncbi.nlm.nih.gov/2075390/

ABSTRACT

An attempt was made to detect multiple invasion of erythrocytes by Plasmodium vivax in district Shahjahanpur, India. Out of 33,027 P. vivax cases examined, 84 showed multiple invasion of erythrocytes. There were 14 cases who showed more than five rings in an erythrocyte. Maximum invasion of an erythrocyte was observed in a 50 year old male patient, a single erythrocyte was harbouring 12 rings. In 5 patients more than one schizonts were present in single erythrocyte. The number of merozoites per schizont varied from 2-28. In some of the cases erythrocytes were having more than one stage of the malarial parasite. Such variations are probably related to the P. vivax strain found in this area.

129. Ansari MA, **Sharma VP**, Razdan RK, Mittal PK. Evaluation of certain mosquito repellents marketedinIndia. *Indian J Malariol* 1990 Jun;*27*(2):57–64. PMID:2209929
https://pubmed.ncbi.nlm.nih.gov/2209929/

ABSTRACT

A study was carried out in certain villages of Distt. Ghaziabad (U.P.) to evaluate the efficacy of commercially available mosquito repellent preparations and devices. Results revealed that none of the repellents tested provided absolute protection against mosquito bites. The protection varied from 38 to 98% with different species of mosquitoes. In general, better protection was provided against Anopheles bite than against Culex. Of ten repellents evaluated. Mylol oil and Tortoise coils were marginally superior to Odomos cream and Rooster coils. Among electrical devices, Good Bye and Casper were marginally superior to Good Knight and Knight Queen

130. Adak T, Subbarao SK, **Sharma VP.** Genetics of golden-yellow larva in Anopheles stephensi. *J Am Mosq Control Assoc* 1990 Dec;*6*(4):672–6. PMID:2098476. https://pubmed.ncbi.nlm.nih.gov/2098476/

ABSTRACT

Two larval body color mutants, golden-yellow larva (gy) and Black larva (Bl) were isolated from laboratory strains of Anopheles stephensi. The inheritance pattern revealed that golden-yellow larva was an autosomal recessive and Black larva an autosomal semi-dominant mutant. Both of these mutants were found to be linked with a map distance of 3.75 +/- 0.42 and have been placed in linkage group III.

131. Sharma RC, Gautam AS, Orlov V, **Sharma VP**. Relapse pattern of Plasmodium vivax in Kheda district, Gujarat. Malaria Research Centre, Civil Hospital, Nadiad, India. *Indian J Malariol* 1990 Jun; *27*(2):95–9. PMID:2209933 https://pubmed.ncbi.nlm.nih.gov/2209933/

ABSTRACT

A study on relapse pattern of P. vivax in Kheda district of Gujarat revealed that the relapse rate in P. vivax within 8 months of primary attack was around 40% in untreated cases. It was 2.6% within one year in patients treated with 5-day course of primaquine. Relapses occurred more frequently from April to October and 82% relapses occurred within one year of the primary attack. Relapses occurred up to 4 years after primary attack but they were less frequent in 3rd and 4th year.

132. Yadav RS ,**Sharma VP**, Ghosh SK, Kumar A. Quartan malaria--an investigation on the incidence of Plasmodium malariae in Bisra PHC, District Sundargarh, Orissa. *Indian J Malariol* 1990 Jun; *27*(2):85–94. PMID:2209932 https://pubmed.ncbi.nlm.nih.gov/2209932/

ABSTRACT

A longitudinal study on the incidence of P. malariae was taken up from September 1988 to December 1989 in Bisra block, District Sundargarh, Orissa covering 38,615

population, which is mainly tribal. The area is a known hard-core malarious region in the Garhjat hill range in eastern India. In this study, out of 22,217 blood smears examined through weekly active surveillance, 7362 (33.1%) were found malaria parasite positive. Out of the total positive cases, 82 (1.1%) were P. malariae. These occurred mostly (91.4%) in persons below 40 years of age and children below 9 years accounted for 36.6% of total quartan malaria cases. In this age group the disease was found to be associated with splenomegaly (average enlarged spleen 2.07; spleen rate 45.9%) and 9 out of 13 mixed infections of P. malariae with P. falciparum and/or P. vivax were detected from this age group. This is the first report of quartan malaria from this

Titles: A-Z

1991

133. Dua VK, Sharma SK, **Sharma VP**. A study of current practices in the treatment of malaria in industrial complexes in India. *Indian J Malariol* 1991 Sep;*28*(3):199–200. PMID:1822459. https://pubmed.ncbi.nlm.nih.gov/1822459/

134. Mittal PK, Adak T, **Sharma VP**. Acute toxicity of certain organochlorine, organophosphorus, synthetic pyrethroid and microbial insecticides to the mosquito fish Gambusia affinis (Baird and Girard). *Indian J Malariol* 1991 Sep;*28*(3):167–70. PMID:1822454.
https://pubmed.ncbi.nlm.nih.gov/1822454/

ABSTRACT

Acute toxicity of certain organochlorine, organophosphorus, synthetic pyrethroid and microbial insecticides to the mosquito fish Gambusia affinis were determined to collect baseline data for selecting the resistant strains of the fish. The synthetic pyrethroid, Lambdacyhalothrin was most toxic to the fish (LC50 = 0.0022 ppm), followed by deltamethrin, cypermethrin and fenvalerate. Organochlorine insecticides, DDT and gamma-HCH, were less toxic than the pyrethroids, and these were followed by organophosphorus insecticides, malathion, fenthion, monocrotophos and temephos. The last two insecticides were least toxic among the different chemical insecticides (LC50 greater than 80 ppm ai). The microbial insecticide ABG-6262 (Vectolex 2.5 AS), a Bacillus sphaericus preparation, was totally harmless to the fish at 2500 microliters/l up to one week.

135. K. Vasantha, Sarala K. Subbarao, **Sharma VP**. Anopheles culicifacies complex-Population cytogenetic evidence for species D (Diptera : culicidae). *Ann Entomol Soc Am* 1991 Sept 1;*84*(5):531–36.
https://doi.org/10.1093/aesa/84.5.531.

ABSTRACT

Seven paracentric inversions, designated i1 to o1, on polytene chromosome arm 2 and one, r, on chromosome arm 3 were found in natural populations of the Anopheles culicifacies complex. Of the polymorphic inversions on chromosome arm 2, one was found in species B, whereas all others were in species A and the r inversion on chromosome arm 3 was found in both the species. One inversion on chromosome arm 2, the i1 inversion, was observed at low frequency in parts of northern India and as a cline of progressively higher frequencies towards central India. In southern India, there was no specific pattern of i1 distribution, with most localities showing Hardy-Weinberg equilibrium frequencies. Significant deficiencies of i1 heterozygotes in a few populations, mostly towards the northern end of the cline, indicate a second species within species A. The same inversion may be floating in one species and fixed in the other; thus, the two species are homosequential for polytene chromosome arrangements. These data support a recent report of species D within this group, but polytene chromosome arrangement cannot be used to identify species A and D at an individual level.

136. Dua VK, Sharma SK, **Sharma VP.** Bioenvironmental control of malaria at the Indian Drugs and Pharmaceuticals Ltd., Rishikesh (U.P.). *Indian J Malariol* 1991 Dec;*28*(4):227–35. PMID:1688112
https://pubmed.ncbi.nlm.nih.gov/1688112/

ABSTRACT

Bioenvironmental control of malaria was achieved at the Indian Drugs and Pharmaceuticals Ltd. (IDPL) complex, Rishikesh, Dehra Dun distt., Uttar Pradesh, India. The IDPL complex is in 15 sq km area with about 25,000 population. One major mosquito-breeding site of about one sq km was eliminated by diverting the factory effluents into a drain. Filling borrow pits, ditches and low-lying areas with burnt coke ash, cleaning blocked drains, mosquito-proofing the overhead water tanks, application of larvivorous fishes and improved case detection and treatment were the additional malaria-control measures. Impact assessment of the interventions revealed that there was

25% reduction in malaria incidence as well as 90% reduction in the use of antimalarials, and a considerable reduction in nuisance mosquito species and malaria vector densities

137. V K Dua, R Sarin, **V P Sharma**. Determination of sulfalene in plasma red blood cells and whole blood by high-performance liquid choromatography. *J Chromatogr* 1991 Feb 15;*563*(2):333–40. doi: 10.1016/0378-4347(91)80039-f. https://pubmed.ncbi.nlm.nih.gov/2055996/

ABSTRACT

A normal phase high-performance liquid chromatographic method using dichloromethane-methanol-perchloric acid (1 M) (96:9:1, v/v) at a flow-rate of 1 ml/min on a Nucleosil 100-7 column (250 x 8 x 4 mm) and UV detection at 254 nm, has been developed to determine the concentration of sulfalene in plasma, red blood cells and whole blood after oral administration of the antimalarial drug metakelfin. The coefficient of variation was 7.1% and the extraction recovery was 82%. Mean concentrations of sulfalene on days 1, 7 and 15 were: 49.56, 10.46 and 2.24 micrograms/ml in plasma, 25.02, 4.34 and 0.84 micrograms/ml in red blood cells and 21.12, 4.44 and 1.00 micrograms/ml in whole blood, respectively. Quinine, chloroquine, desethylchloroquine, mefloquine, primaquine, sulfadoxine, pyrimethamine and dapsone did not interfere in the detection of sulfalene.

138. Ansari MA, **Sharma VP**, Mittal PK, Razdan RK. Evaluation of juvenile hormone analogue JHM/S-31183 against immature stages of mosquitoes in natural habitats. *Indian J Malariol* 1991 Mar;*28*(1):39–43. PMID:1915983 https://pubmed.ncbi.nlm.nih.gov/1915983/

ABSTRACT

A study was carried out to evaluate the potentiality of Juvenile hormone compound JHM/S-31183 against immatures of mosquitoes in natural habitats. Of two formulations tested 1% emulsifiable formulation was marginally superior than the granule formulation. Adult emergence of An. stephensi was completely inhibited upto 12 weeks when 0.5%

granule formulation was applied at 0.04 ppm in wells as against 50% inhibition upto 8 weeks in pools. However, in Culex quinquefasciatus the per cent inhibition of adult emergence varied from 52 to 90 per cent. 100% inhibition in pools upto one week at 0.04 ppm in An. stephensi was also obtained with 1% emulsifiable formulation but the effect was diluted in successive weeks. The impact of this formulation was not much pronounced against Culex quinquefasciatus.

139. Roy A, Ansari MA, **Sharma VP**. Feeding behavior patterns of anophelines from Uttar Pradesh and Gujarat states of India. *J Am Mosq Control Assoc* 1991 Mar;*7*(1):11–5. PMID:2045801.
https://pubmed.ncbi.nlm.nih.gov/2045801/

ABSTRACT

Identification of host blood meals collected on filter paper in the field from fully fed female anophelines was carried out by a microdot-ELISA; field-caught mosquito species were simultaneously identified. The results indicate that the percentages of mixed feeds, i.e., mosquitoes feeding both on human and cattle hosts to complete a blood meal, was only 3-4%. Human and mixed feeds together accounted for nearly 10% of bloodmeals. Mosquitoes collected from human dwellings did not show a higher percentage of human feeding than cattle feeding. The human blood index was found to be related to the proportion of human and cattle population in an area.

140. Joshi, Hema, k. Raghavendra, Sarala K. subbarao, **Sharma VP**. Genetic markers in the refractory and susceptible subjects of malaria patients in village Bhanera, Distt. Ghaziabad, UP. *Indian J Malariol* 1991;*28*(3):161–166. PMID: 1822453.
https://pubmed.ncbi.nlm.nih.gov/1822453/

ABSTRACT

Malaria 'susceptible' and 'refractory' subjects from village Bhanera in District Ghaziabad (Uttar Pradesh) were examined for various genetic markers, viz., ABO, haptoglobin, haemoglobin and glucose-6-phosphate dehydrogenase polymorphism. One hundred and

nine susceptible and 36 refractory subjects were studied. No significant differences with respect to distribution patterns of the genetic markers were observed in the two groups except for AB blood group. In general, a high incidence of ahaptoglobinaemia was observed in this population and incidence increased with the increase in malaria attacks, suggesting that repeated malaria attacks cause ahaptoglobinaemia.

141. Adak T, Subbarao SK, **Sharma VP**. Genetics of isocitrate dehydrogenase in Anopheles stephensi. *Biochem Genet* 1991 Oct;*29*(9-10):415–20. PMID:1722974 https://pubmed.ncbi.nlm.nih.gov/1722974/

142. Gautam AS, Sharma RC, **Sharma VP**, Sharma GK. Importance of clinical diagnosis of malaria in national malaria control programme. *Indian J Malariol* 1991 Sep;*28*(3):183–7. PMID:1822457 https://pubmed.ncbi.nlm.nih.gov/1822457/

ABSTRACT

The study conducted at Kheda district, Gujarat, revealed that judgement of patient on the basis of symptoms and diagnosis of the doctor were correct in 50 and 27% of the suspected malaria cases respectively. In malaria control programme, emphasis on health education and passive case detection is indicated.

143. Sharma YD, **Sharma VP**, Ray P, Laal S, Sawant SD, Verma S. Isolation and serological characterization of a Plasmodium vivax recombinant antigen. *Infect Immun* 1991 Jun;*59*(6):1922–6. doi:10.1128/IAI.59.6.1922-1926.1991. PMID:2037353. https://pubmed.ncbi.nlm.nih.gov/2037353/

ABSTRACT

A genomic library for Plasmodium vivax was constructed in lambda gt11 and immunologically screened with pooled serum samples from vivax patients. Six seroreactive clones were isolated, and one clone, denoted PV9, was studied further. This clone has an unusual base composition (65% G + C), does not share any homology with

P. falciparum, and codes for an entirely new antigenic determinant. Antibodies (immunoglobulin G type) against the PV9-encoded polypeptide were produced in all vivax patients older than 15 years. This seroreactivity was lower among patients younger than 15 years (53%). The antigenic epitope(s) of the PV9-encoded polypeptide was recognized at a similar rate by serum samples from P. vivax patients who were living 350 to 973 km apart. Fifty percent of uninfected Indian adults were also seropositive, whereas all European and American (United States) sera tested were negative, suggesting that anti-PV9 antibodies persist after infection. The seroreactivity pattern of this antigen is similar to that of the immunity developed in malaria after repeated infections.

144. A Kumar , **Sharma VP**, D Thavaselvam. Malaria related to construction in Panaji, Goa. *Indian J Malariol* 1991 Dec;*28*(4):219–25. PMID:1824357.
https://pubmed.ncbi.nlm.nih.gov/1824357/

ABSTRACT

A marked difference in malaria incidence amongst labour imported for construction and local residents was observed in a study following the outbreak of malaria in Panaji (Goa) in 1986. Water stagnation in and around the construction was the main breeding site for An. stephensi and the intensity of malaria transmission was dependent on the area under construction.

145. M. K. Pillai, S.K. Subbarao, **Sharma VP.** Resistance in Anopheles Culicifacies Sibling Species B And C to malathion in Andhra Pradesh and Gujrat States, india. *J. Am. Mosq. Control Assoc* 1991,*7*(1):255-259. PMID:1895083
https://pubmed.ncbi.nlm.nih.gov/1895083/

ABSTRACT

ABSTRACT. Studies conducted in Warangal, Khammam and Mahabubnagar districts in Andhra Pradesh and Surat district in Gujarat have revealed that *Anopheles culicifacies sensu lato* (*s.l.*) populations were resistant to malathion. In the absence of indoor spraying of malathion in public health programs in the 3 districts of Andhra Pradesh, resistance is attributed to the extensive use of pesticides in agriculture. Species B and C were sympatric in all areas surveyed, and both the species were resistant to malathion. In most of the surveys carried out in Mahabubnagar, Khammam and Warangal, levels of resistance were higher in species C than in B. In Mahabubnagar district an increase in resistance from 5.5 to 64% was observed from 1985 to 1987 in *An. culicifacies s.l.* The proportion of species C was low in the initial 2 surveys, and in the later surveys the proportion was almost equal to that of species B; the resistance level was also significantly higher than in species B. In Surat district, where resistance ranged from 74 to 93%, the level of resistance in the 2 species was almost the same.

146. Prasad RN, Virk KJ, **Sharma VP**. Relapse/reinfection patterns of Plasmodium vivax infection: a four year study. *Southeast Asian J Trop Med Public Health* 1991 Dec;*22*(4):499–503. PMID:1820634 https://pubmed.ncbi.nlm.nih.gov/1820634/

ABSTRACT

In an endemic area relapse and reinfection in Plasmodium vivax cases poses serious problems for the malaria control program. We have studied the relapse/reinfection patterns of P. vivax infection in 26 villages of District Shahjahanpur, a malaria endemic area of UP, India for a period of four years (May, 1986 to October, 1988). All the P. vivax cases were given a complete course of radical treatment and were followed-up for relapse/reinfection. There were 8,914, 2,484, 1,439 and 883 P. vivax cases in 1986, 1987 and 1989 respectively, our of which 2,066, 141, 58 and 18 cases in the respective years showed relapse/reinfection. The maximum number of relapse/reinfection was recorded from a 47 year old male patient, who suffered from P. vivax infection eight times. The percentage occurrence of relapse/reinfection was much higher (70.2%) in males compared with females (29.8%). Relapses were more common among 16-30 years old patients. In conclusion it was felt that in 1986 relapse/reinfection in vivax cases was higher due to improper treatment of these cases. This situation may have occurred due to lack of awareness among the public, poor surveillance by the National Malaria Program or higher density of the vector mosquitos in the area.

147. Raghavendra K, Vasantha K, Subbarao SK, Pillai MK, **Sharma VP**. Resistance in Anopheles culicifacies sibling species B and C to malathion in Andhra Pradesh and Gujarat States, India. *J Am Mosq Control Assoc* 1991 Jun; *7*(2):255–9. PMID:1895083 https://pubmed.ncbi.nlm.nih.gov/1895083/

ABSTRACT

Studies conducted in Warangal, Khammam and Mahabubnagar districts in Andhra Pradesh and Surat district in Gujarat have revealed that Anopheles culicifacies sensu lato (s.l.) populations were resistant to malathion. In the absence of indoor spraying of

malathion in public health programs in the 3 districts of Andhra Pradesh, resistance is attributed to the extensive use of pesticides in agriculture. Species B and C were sympatric in all areas surveyed, and both the species were resistant to malathion. In most of the surveys carried out in Mahabubnagar, Khammam and Warangal, levels of resistance were higher in species C than in B. In Mahabubnagar district an increase in resistance from 5.5 to 64% was observed from 1985 to 1987 in An. culicifacies s.l. The proportion of species C was low in the initial 2 surveys, and in the later surveys the proportion was almost equal to that of species B; the resistance level was also significantly higher than in species B. In Surat district, where resistance ranged from 74 to 93%, the level of resistance in the 2 species was almost the same.

148. M A Ansari , **V P Sharma**. Role of Azolla in controlling mosquito breeding in Ghaziabad districtvillage(U.P). I*ndian J Malariol* 1991 Mar;*28*(1):51–4. PMID:1680758. https://pubmed.ncbi.nlm.nih.gov/1680758/

ABSTRACT

A survey was carried out during post-monsoon period (1988-89) in villages of Dhaulana Primary Health Centre, Distt. Ghaziabad (U.P.) to evaluate the utility of Azolla pinnata for the control of mosquito breeding in different habitats. Results of the survey revealed that pools, ponds, wells, rice fields and drains were infested with Azolla. Infestation rate and intensity of infestation varied from habitat to habitat. Maximum infestation (36.5%) was observed in pools and minimum (3.7%) in rice fields. Anopheline breeding was almost completely suppressed (0-1.6/dip) in pools, wells and ponds completely covered with Azolla. The breeding of Culex spp. was not completely inhibited in any habitat, though reduction in immature density was observed in comparison to control. The role of Azolla in controlling mosquito breeding and its association with the blue green algae which fixes nitrogen is discussed.

149. RC Sharma, AS Gautam, RM Bhatt, DK Gupta, **Sharma VP.** The Kheda malaria project: the case for environment control. *Health Policy Plan* 1991 Sept *6*(3):262-70. https://doi.org/10.1093/heapol/6.3.262

https://academic.oup.com/heapol/article-abstract/6/3/262/625651?redirectedFrom=fulltext

ABSTRACT

The Kheda project experience has shown that bio-environmental control of malaria is feasible, cost effective and ecologically sound. It clearly brings out the need to consider health issues at the planning stage of all developments. Bio-environmental control of malaria is suggested as the first line of attack for the control of mosquitoes, malaria and other mosquito-borne diseases. Insecticides may be reserved for short-term use. This will enable judicious and selective use of insecticides in solely epidemic situations. The growing problem of resistance to insecticides in mosquitoes as well as environmental pollution, can then be solved on a long term basis.

1992

150. Wajihullah N, Babita Jana and **Sharma VP**. Anopheles minimu in Assam. *Curr Sci 63*(1)7–9.

151. Adak T, Subbarao SK, **Sharma VP**, Rao SR. Assignment of 6-phosphogluconate dehydrogenase and malate dehydrogenase to chromosome 3 of Anopheles stephensi. *Biochem Genet.* 1992 Oct;*30*(9-10):507–13. doi: 10.1007/BF01037589. PMID: 1445190. https://pubmed.ncbi.nlm.nih.gov/1445190/

ABSTRACT

Genetics and linkage analysis of 6-phosphogluconate dehydrogenase (6-PGD) and malate dehydrogenase (MDH) have been investigated in Anopheles stephensi. Both these markers were found to be autosomal and linked and have been assigned to linkage group III. Two mutant markers, Black larva (Bl) and golden-yellow larva (gy), were used to establish the map distances, and the current sequence of loci on chromosome 3 is as follows: Bl (3.75)-gy (14.53)-Mdh-2 (49.83)-6-pgd

152. K. Raghavendra, Sarala K. Subbarao, K. Vasantha, M.K.K. Pillai, **Sharma VP**. Differential selection of malathion resistence in Anopheles culicifacies A and B (Diptera : Culicidae) in Haryana state, India. *J Med Entomol* 1992 Mar;*29*(2) :183–7 doi: 10.1093/jmedent/29.2.183.
https://pubmed.ncbi.nlm.nih.gov/1495027/

ABSTRACT

In November 1989, for the first time after the introduction of malathion spray in 1982, increased densities of Anopheles culicifacies Giles s.l. were observed in Chhatera and Barota, two villages in Halalpur block in Sonepat District, Haryana State, India. In bioassay tests against the diagnostic dose of malathion (5% for 1 h), 41–47% of mosquitoes survived. An. culicifacies populations in this area comprise two sibling species, A and B. Differential malathion resistance was observed; in species A it was 2—9% and in species B 62–66%. Likewise, species A was found to be more susceptible to DDT than was species B. The possible use of DDT spray to delay the onset of malathion resistance is discussed.

KEYWORDS: Insecta, Anopheles culicifacies, sibling species, malathion resistance.

153. MA Ansari, **VP Sharma,** K Razdan. Esbiothrin-impregnated ropes as mosquito repllent. *Indian J Malariol* 1992 Dec;*29*(4):203–10.PMID:1291341.
https://pubmed.ncbi.nlm.nih.gov/1291341/

ABSTRACT

Esbiothrin [(+/-)-3-allyl-2-methyl-4-oxocylopent-2-enyl-(+)-trans- chrysanthemate] is an improved isomeric composition of allethrin series and consists essentially of esters of chrysanthemic acid and allethrolone. Jute rope was impregnated with esbiothrin and the smoke from smouldering ropes was evaluated as mosquito repellent in human dwellings and cattlesheds with open doors and windows at different dosages. Esbiothrin-impregranted (500 ppm) ropes prevented the entry of more than 95% An. culicifacles and other anophelines, 90.9-88.8% Culex quinquefasciatus and 96-95.1% total mosquitoes in open rooms of houses and cattlesheds respectively. The impact of ropes was more

pronounced on the biting rate of mosquitoes. Indoors and outdoors human baits seated at a distance of about 3 m from smouldering esbiothrin ropes experienced no bite at all from An. culicifacies. An iron mesh around the rope prevents fire hazards.

154. Yadav RS, Padhan K, **Sharma VP**. Fishes of District Sundargarh, Orissa, with special reference to their potential in mosquito control. *Indian J Malariol* 1992 Dec;*29*(4):225–33. PMID: 1363317.
https://pubmed.ncbi.nlm.nih.gov/1363317/

ABSTRACT

An extensive fish fauna survey was carried out in Sundargarh, a malaria-endemic district in Orissa, during 1988 to 1990 to identify and evaluate the indigenous larvivorous fishes for mosquito control. In all, 57 species belonging to 19 families under 6 orders were found in the local water bodies. On laboratory evaluation against anopheline and culicine larvae, six potential larvivorous fishes, viz. Aplocheilus panchax, Oryzias melastigma, Oreochromis mossambicus, Gambusia affinis, Danio (B.) rerio and Esomus danricus were selected. Feasibility of mass multiplication of these fishes in village ponds for operational use is being studied.

155. S Haq , RN Prasad, H Prasad, R P Shukla, **Sharma VP**. Gambusia affinis: Dispersal due to floods and its failure to colonize new water bodies in Shahjahanpur district (U.P.). *Indian J Malariol* 1992 Jun;*29*(2):113–118.PMID:1459304.
https://pubmed.ncbi.nlm.nih.gov/1459304/

ABSTRACT

In villages of District Shahjahanpur, 122 decentralized Gambusia multiplication ponds were established to cover the need of the entire district. Profuse breeding of Gambusia was observed in these ponds. The fishes are being successfully used in mosquito control all over the district. In July 1990 there was a widespread flood due to which 70 Gambusia multiplication ponds were affected and the fish was washed away in large numbers, leaving only a scanty population in the flood-affected ponds. We utilized this opportunity

to study the natural dispersal and colonization of Gambusia in different aquatic habitats. The study revealed that Gambusia was either not found in most habitats or was present in very small numbers, and on its own Gambusia was unable to eliminate the local fauna to become a dominant species. Predatory fishes and birds played a major role in eliminating Gambusia. Gambusia is therefore unlikely to pose any ecological hazard in vector-control.

156. Srivastava A, Saxena R, Nagpal BN, **Sharma VP.** Matrix based approach for identification of Indian anophelines. *Indian J Malariol* 1992 Sep; *29*(3):185–91. PMID:128673.
https://pubmed.ncbi.nlm.nih.gov/1286734/

157. Natarajan D, **Sharma VP**, Sharma SC. Percutaneous mitral valvotomy by Inoue catheter in young patients with mitral stenosis. *Am Heart J* 1992 Feb;*123*(2):541–3. PMID:1736599 doi: 10.1016/0002-8703(92)90680-t.
https://pubmed.ncbi.nlm.nih.gov/1736599/

158. Subbarao SK, Vasantha K, Joshi H, Raghavendra K, Usha Devi C, Sathyanarayan TS, Cochrane AH, Nussenzweig RS, **Sharma VP**. Role of Anopheles culicifacies sibling species in malaria transmission in Madhya Pradesh state. *India. Trans R Soc Trop Med Hyg* 1992 Nov-Dec;*86* (6):613–4. PMID: 1287914 doi: 10.1016/0035-9203(92)90149-7
https://pubmed.ncbi.nlm.nih.gov/1287914/

159. S K Ghosh, R S Yadav, **Sharma VP**. Sensitivity status of Plasmodium falciparum to Chloroquine, Amodiaquine, Quinine, Mefloquine and Sulfadoxine/Pyeimethamine in a tribal population of District Sundergarh, Orrisa. *Indian J Malariol* 1992 Dec;*29*(4):211–8. PMID:1291342.
https://pubmed.ncbi.nlm.nih.gov/1291342/

ABSTRACT

In a malaria-endemic area of Orissa, wherein chloroquine has been in use for over thirty years, 58.3% (14/24) P. falciparum cases did not respond to single dose chloroquine (10 mg base/kg) in in-vivo test. With standard dose (25 mg base/kg) 31.2% cases (10/32) showed resistance, i.e. at RI (15.6%), RII (9.4%) and RIII (6.2%) levels. Standard dose was superior in response to the single dose therapy [$p < 0.05$; chi 2 (df 1) = 4.11]. Out of eight isolates tested in vitro, two showed resistance to chloroquine, five to sulfadoxine/pyrimethamine (SP) but all were sensitive to amodiaquine, quinine and mefloquine. Whereas the standard dose of chloroquine would be a better option in general, in resistant cases, SP, quinine and mefloquine offer an alternative drug choice. The implications of drug resistance in a malaria-control programme and the need to revise drug policy in India are discussed.

1993

160. Subbarao SK, Nanda N, Chandrahas RK, **Sharma VP**. Anopheles culicifacies complex: cytogenetic characterization of Rameshwaram island populations. *J Am Mosq Control Assoc* 1993 Mar; *9*(1):27–31. PMID: 8468571
https://pubmed.ncbi.nlm.nih.gov/8468571/

ABSTRACT

Anopheles culicifacies sensu lato collected from Rameshwaram island, Tamil Nadu state, India was identified as species B based on the diagnostic inversion karyotype Xab 2g1+h1 as observed in polytene chromosomes. Among male mitotic karyotypes made from larval neurogonial cells, two types were observed: one with an acrocentric Y-chromosome and the other with a sub-metacentric Y-chromosome, both had sub-metacentric X and metacentric autosomes. The Rameshwaram population is identical to species B in its genetic relationship with species A and C as determined by experimental hybridizations (sterile and fertile male hybrids, respectively).

161. V K Dua, S K Sharma, **Sharma VP.** Application of Bactoculicide (Bacillus thuringiensis H-14) for controlling mosquito breeding in industrial scrap at BHEL, Hardwar(U.P.). *Indian J Malariol* 1993 Mar;*30*(1):17–21. PMID:8100539. https://pubmed.ncbi.nlm.nih.gov/8100539/

ABSTRACT

Bactoculicide (Bacillus thuringiensis) was evaluated in field trials for controlling mosquito breeding of Aedes, Culex and Anopheles in industrial scraps such as broken heavy machine parts, iron moulds and discarded drums. A dose of 0.5 g/m2 was controlled 96-100% mosquito breeding up to five weeks.

162. Ravindranath VK, Kapoor DN, **Sharma VP**. Biomechanical evaluation of bonding with glass ionomer cement. *J Pierre Fauchard Acad* 1993 Mar;*7*(1):17–25.PMID: 9791242 https://pubmed.ncbi.nlm.nih.gov/9791242/

ABSTRACT

This study was designed to determine the bond strength of three commercially available glass ionomer cements when used to bond mesh-backed medium twin standard edgewise (.022" x .028") brackets to enamel surface. The bond strength of one composite resin was compared with those of the glass ionomer cements. Scanning electron microscopic study of the debonded enamel surface was carried out to evaluate the effects of the bonding agents on enamel. The teeth were bonded with all the materials according to manufacturers' specifications. Each specimen was embedded in Dental stone with the bonded facial surface exposed. A special bracket holder was used to hold the brackets precisely under the wings during debonding. An Instron universal testing machine was used to measure the forcrequired for bond failure. To simulate oral conditions, the direction of pull was so designed that it included an element of torsional stress along with tensile force. The findings indicate that Ketac-cem and Fuji II Glass ionomer cements hae adequate bond strength for clinical use. The scanning electron photomicrographs revealed that the enamel was least affected and well preserved in the Glass ionomer cement group.

Further investigation is required to test the bond strengths of Glass ionomer cements clinically.

162**(A).** Sharma VP. Ecosystem approach to malaria control. Proceedings of the National Academy of Science 1993; 63(B):47-5.

163. P K Mittal , T Adak, **V P Sharma**. Effect of temperature on toxicity of two bioinsecticides Spherix (Baxillus Sphaericus) and Bactoculicide (Bacillus thuringiensis) against larvae of four vector mosquitoes. *Indian J Malariol* 1993 Mar;*30*(1):37–41. PMID:8100540.
https://pubmed.ncbi.nlm.nih.gov/8100540/

ABSTRACT

Two bioinsecticide preparations, viz. Spherix (Bacillus sphaericus) and Bactoculicide (Bacillus thuringiensis H-14), were tested in the laboratory against larvae of Anopheles culicifacies, Anopheles stephensi, Culex quinquefasciatus and Aedes aegypti at different temperatures. The LCs50 of Spherix against III instar larvae of these species at 27 +/- 2 degrees C were 2.0, 0.19, 0.05 and > 40 mg/litre, respectively and those of Bactoculicide were 0.32, 0.16, 0.06 and 0.03 mg/litre, respectively. The toxicity of two bioinsecticides, especially Spherix, varied to a great extent when the tests were repeated at 21 +/- 2 degrees C and 31 +/- 2 degrees C. At 21 +/- 2 degrees C, Spherix was almost non-toxic against larvae of An. culicifacies and An. stephensi (LC50 > 10 mg/l) but at 31 +/- 2 degrees C the bioinsecticide was highly toxic against An. culicifacies (LC50 = 0.48 mg/litre) and An. stephensi (LC50 = 0.04 mg/litre). A similar effect of the temperature was also observed with Bactoculicide.

164. **Sharma VP**, Nagpal BN, Srivastava A. Effectiveness of neem oil mats in repelling mosquitoes. *Trans R Soc Trop Med Hyg* 1993 Nov-Dec;*87*(6):626. PMID:7905211 doi: 10.1016/0035-9203(93)90263.
https://pubmed.ncbi.nlm.nih.gov/7905211/

165. R Kumari, H Joshi, A Giri, **Sharma VP**. Feeding preferences of Anopheles sundaicus in Car Nicobar Island. *Indian J Malariol* 1993 Dec;*30*(4):201–6. PMID:8034108.
https://pubmed.ncbi.nlm.nih.gov/8034108/

ABSTRACT

Host feeding behaviour of An. sundaicus population in Car Nicobar Island was studied by bloodmeal analysis and bait collection. Results indicated the zoophagic nature of the species in different resting sites. However, a human blood index of 0.18 was observed in specimens collected from human dwellings. The highest proportion of females was found positive for porcine antigen. Bait collections also indicated a similar feeding pattern.

166. **SharmaVP**, BN Nagpal, Aruna Srivastava and Anoop Rawal. Indian Anopheles fauna and species distribution information system. *Mosq Syst* 1993;*25*:64–65.

167. Adak T, Subbarao SK, **Sharma VP**. Inheritance and linkage of malic enzyme in Anopheles stephensi. *J Am Mosq Control Assoc* 1993 Sep;*9*(3):313–5. PMID:8245941
https://pubmed.ncbi.nlm.nih.gov/8245941/

ABSTRACT

Genetics and linkage analysis of malic enzyme (Me) have been worked out in Anopheles stephensi. Genetic analysis revealed the 2 variants to be codominant alleles at a locus Me, which is sex-linked. Linkage studies with another X-linked mutant red-eye (r), indicated that the map distance between 2 loci was 44.60 +/- 1.07.

168. Dua VK , Kar PK, Kumar S, **Sharma VP**. In-vivo and in-vitro sensitivity of Plasmodium falciparum to chloroquine at Indian Oil Corporation, Mathura (U.P.). *Indian J Malariol* 1993 Mar;*30*(1):29-35 PMID:8319813
https://pubmed.ncbi.nlm.nih.gov/8319813/

ABSTRACT

In vivo and in vitro susceptibility of Plasmodium falciparum to chloroquine were conducted at Indian Oil Corporation (IOC), Mathura, India. 18 out of 31 cases showed resistance [minimum inhibitory concentration (MIC) 8 pmol] in in vitro study. EC50 and EC90 values estimated from log-probit analysis for resistant isolates were 0.66 and 1.44 microM/litre, and for sensitive isolates 0.28 and 0.96 microM/litre blood respectively. In vivo tests identified 13 cases (40.62%) as resistant and 19 cases (59.73%) as sensitive out of 32 cases. All the cases belonged to IOC, Mathura complex, or its vicinity.

169. Mittal PK, Adak T, Batra CP, **Sharma VP**. Laboratory and field evaluation of Spherix, a formulation of Bacillus sphaericus (B-101), to control breeding of Anopheles stephensi and Culex quinquefasciatus. *Indian J Malariol* 1993 Jun;*30*(2):81–9. PMID: 8405598.
https://pubmed.ncbi.nlm.nih.gov/8405598/

ABSTRACT

Spherix, a powder formulation of Bacillus sphaericus strain B-101, serotype H5a 5b, was evaluated against larvae of Anopheles stephensi and Culex quinquefasciatus in both the laboratory and field. In laboratory tests the formulation @ 0.1 g/sq m produced 100% mortality against larvae of both mosquito species at room temperature (28-32 degrees C). The larvicidal activity of Spherix against An. stephensi @ 0.5 g/sq m persisted for over 12 weeks under laboratory conditions. Field evaluation of Spherix @ 0.25-2.0 g/sq m produced 95-100% reduction in the larval density of both An. stephensi and Culex quinquefasciatus within 48 h in different habitats, and the larvicidal activity persisted for 2-4 weeks in water habitats.

170. **Sharma VP** , Ansari MA, Razdan RK. Mosquito repellent action of neem (Azadirachta indica) oil. *J Am Mosq Control Assoc* 1993 Sep;*9*(3):359-60. PMID:8245950.
https://pubmed.ncbi.nlm.nih.gov/8245950/

ABSTRACT

Two percent neem oil mixed in coconut oil, when applied to the exposed body parts of human volunteers, provided complete protection for 12 h from the bites of all anopheline species. Application of neem oil is safe and can be used for protection from malaria in endemic countries

171. **Sharma VP**, Dhiman RC. Neem oil as a sand fly (Diptera: Psychodidae) repellent. *J Am Mosq Control Assoc* 1993 Sep;*9*(3):364–6. PMID:8245951 https://pubmed.ncbi.nlm.nih.gov/8245951/

ABSTRACT

The repellent action of neem oil was evaluated against sand flies under laboratory and field conditions. Concentrations of 2% neem oil mixed in coconut or mustard oil provided 100% protection against Phlebotomus argentipes throughout the night under field conditions; against Phlebotomus papatasi it repelled sand flies for about 7 h in the laboratory. Neem oil is an indigenous product and a low-cost alternative for personal protection against sand fly bites.

172. SK Chand, RS Yadav and **Sharma VP**. Seasonality of indoor resting mosquitoes in a broken-forest ecosystem of north-western Orissa. *Indian J Malariol* 1993 Sep;*30*(3):145–54. PMID: 7907552. https://pubmed.ncbi.nlm.nih.gov/7907552/

ABSTRACT

The seasonal prevalence and indoor resting habits of mosquitoes in a broken-forest ecosystem of Orissa, which is known to be endemic for malaria and bancroftian filariasis, have been studied. A total of 15 anopheline spp., 9 Culex spp. and one each of Aedes, Armigeres and Mansonia, were collected. Major species with perennial occurrence were Anopheles culicifacies, An. subpictus, An. annularis, An. vagus, An. pallidus, An. nigerrimus, Culex quinquefasciatus and Cx. tritaeniorhynchus. These species rested more in cattlesheds than in human dwellings, except Cx. quinquefasciatus which was abundant

in human dwellings. The prevalence and indoor resting pattern of different species in relation to seasons and other factors were also investigated.

173. **Sharma VP**, Ansari MA, Razdan RK. Use of kerosene lamp containing synthetic pyrethroids to repel mosquitoes. *Indian J Malariol* 1993 Sep;*30*(3):169–76. PMID: 8131884.
https://pubmed.ncbi.nlm.nih.gov/8131884/

ABSTRACT

An indigenous and appropriate method of personal protection was developed and tested in rural areas. It consists of an ordinary kerosene lamp made of tin with a regulator to adjust the wick. Different concentrations of esbiothrin, a synthetic pyrethroid, were mixed in kerosene and allowed to burn in living rooms and cattlesheds from dusk to dawn to observe hourly entry of mosquitoes. The tin lamp (100 ml capacity) without chimney provided the most efficient protection from mosquito bites. The protection varied from 84.2 +/- 8.2 to 97.8 +/- 2.8. Maximum protection was observed against An. culicifacies. Esbiothrin kerosene lamp (0.01%) lighted in living room provided 99.7% protection to exposed human baits seated at a distance of 1 m from the lamp. The technique is simple, cost-effective and does not require electricity and can be used both for illumination and repelling mosquitoes in remote and inaccesible areas.

1994

174. **Sharma VP**, Srivastava A, Nagpal BN. A study of the relationship of rice cultivation and annual parasite incidence of malaria in India. *Soc Sci Med* 1994 Jan; *38*(1):165–78. PMID: 8146708 doi: 10.1016/0277-9536(94)90312-3.
https://pubmed.ncbi.nlm.nih.gov/8146708

ABSTRACT

Twenty one year data (1963-1983) of 25 states/UTs of India on area under rice cultivation and annual parasite incidence was analysed using correlation and regression

analysis to evaluate the relationship of irrigated area under rice cultivation and the statewise annual parasite incidence of malaria. In 23 states either the correlation is negative or non-significant whereas in Punjab and Nagaland significant positive correlation is observed. Study showed that in India at the macro level (i.e. data pooled at the state level both for rice cultivation and (API) rice cultivation by and large had poor relationship to API.

175. Kabilan L, **Sharma VP**, Kaur P, Ghosh SK, Yadav RS, Chauhan VS. Cellular and humoral immune responses to well-defined blood stage antigens (major merozoite surface antigen) of Plasmodium falciparum in adults from an Indian zone where malaria is endemic. *Infect Immun* 1994 Feb;*62*(2):685–91.doi:10.1128/IAI.62.2.685-691.1994. PMID: 8300225.
https://pubmed.ncbi.nlm.nih.gov/8300225/

ABSTRACT

Conserved and variant regions of two blood stage vaccine candidate antigens of Plasmodium falciparum, merozoite surface antigen (MSA-1) and ring-infected erythrocyte surface antigen (Pf155/RESA), have been shown to be immunogenic. However, the relative immunogenicity of these immunogens in different populations has not been studied. The conserved N-terminal region of MSA-1 was investigated for its immunogenicity by studying cellular (T cell) and humoral (B cell) immune responses in P. falciparum-primed individuals, living in malaria-hyperendemic areas (Orissa State, India), where malaria presents an alarming situation. MSA-1-derived synthetic peptides contained sequences that activated T cells to proliferate and release gamma interferon in vitro. There was considerable variation in the responses to different peptides. However, the highest responses (51% [18 of 35] by proliferation and 34% [12 of 35] by gamma interferon release) were obtained with a synthetic hybrid peptide containing sequences from conserved N- and C-terminal repeat regions of MSA-1 and Pf155/RESA, respectively. Antibody reactivities in an enzyme immunoassay of plasma samples from these donors to different peptides used for T-cell activation were heterogeneous. In general, there was poor correlation between DNA synthesis and either gamma interferon

release or antibody responses in individual donors, underlining the importance of examining several parameters of T-cell activation to assess the total T-cell responsiveness of a study population to a given antigen. However, the results from our studies suggest that synthetic constructs containing sequences from the N- and C-terminal regions of MSA-1 and Pf155/RESA representing different erythrocytic stages of the P. falciparum parasite are more immunogenic in humans living in malaria-hyperendemic areas of India who have been primed by natural infection.

176. Mittal PK, Adak T, **Sharma VP**. Comparative toxicity of certain mosquitocidal compounds to larvivorous fish, Poecilia reticulata. *Indian J Malariol* 1994 Jun;*31*(2):43–7. PMID: 7713258
https://pubmed.ncbi.nlm.nih.gov/7713258/

ABSTRACT

Toxicity of certain mosquitocidal compounds (both larvicides and adulticides) to the larvivorous fish Poecilia reticulata was determined in the laboratory. Among the various chemical insecticides tested, the synthetic pyrethroid deltamethrin was most toxic to fish (LC50 = 0.016 ppm), while the organophosphorus insecticide abate was least toxic (LC50 = 34 ppm). The bioinsecticides Spherix (Bacillus sphaericus) and Bactoculicide (Bacillus thuringiensis H-14) showed highest safety for the fish (LC50 > 1000 mg/litre). Integrated use of larvivorous fish and bioinsecticide in vector control has been suggested.

177. **VP Sharma** , RC Sharma. Community based bioenvironmental control of malaria in Kheda District, Gujarat, India. *J Am Mosq Control Assoc* 1989 Dec;*5*(4):514–21. PMID: 2614400.
https://pubmed.ncbi.nlm.nih.gov/2614400/

ABSTRACT

A study on the bioenvironmental control of malaria was launched in 1983 in Nadiad taluka, Gujarat, with help of village communities. The implementation of strategy resulted in the successful control of larval mosquitoes and reduction in the adult vector

populations, and the impact was visible in the curtailment of malaria transmission in large rural areas. When compared with the residual spraying of insecticides under the National Malaria Eradication Programme, the alternate strategy was found feasible, socially acceptable, cost effective and brought about environmental improvement and awareness in the rural areas.

178. Tiwari SN, Prakash A, Subbarao SK, Roy A, Joshi H, **Sharma VP**. Correlation of malaria endemicity with An. culicifacies sibling species composition and malaria antibody profile in district Allahabad (U.P.). *Indian J Malariol* 1994 Jun; *31*(2):48-56 PMID: 7713259
https://pubmed.ncbi.nlm.nih.gov/7713259/

ABSTRACT

Entomological, parasitological and serological surveys were conducted between October 1989 and November 1990 in 27 villages (population 33,250) belonging to three topographically different areas of district Allahabad, viz. Gangapar, Doaba and Yamunapar. A good correlation existed in all the three areas between malaria incidence vis-a-vis An. culicifacies sibling species composition and malaria antibodies titre in the populations. In Gangapar and Doaba villages, An. culicifacies densities were low and the proportions of vector species A and C were much less than that of species B, the non-vector species. Low endemicity of malaria was supported by low antibody titres observed in the population. In contrast, in Yamunapar villages An. culicifacies densities were high, species A and C together were almost equal to species B, and malaria incidence as well as antibody titre were high. Based on these observations, district Allahabad, Uttar Pradesh, could be divided into two zones, low malaria transmission zone--Gangapar and Doaba areas and high malaria transmission zone--Yamunapar area.

179. K.Vasantha, SK Subbarao and **Sharma VP** , Nutan Nanda. Cytogenetic Evidence Three sibling Species in Anopheles fluviatilis(Diptera:Culicidae). *Ann Entomol Soc Am* 1994;*87* (1): 116–121. https://doi.org/10.1093/aesa/87.1.116
https://academic.oup.com/aesa/article-abstract/87/1/116/135221?redirectedFrom=fulltext

ABSTRACT

Three arrangements of chromosome arm 2 occur as homozygotes, without observable heterozygotes, in populations of Anopheles fluviatilis James. This indicates positive assortative mating between populations having different arm 2 arrangements and is taken as evidence for three sibling species within A. fluviatilis. This finding confirms an earlier hypothesis that the taxon is a mixture of biological forms, which was indicated by heterogeneity between populations in their malaria transmission potential on the Indian subcontinent. Rearrangement of arm 2 involves two paracentric inversions, 2q1 and 2r1 giving three types of arm 2: 2 + q1 + r1, 2q1 + r1, and 2 + q1r1. Photomaps of the ovarian polytene chromosomes are presented.

180. Adak T, Batra CP, Mittal PK, **Sharma VP**. Epidemiological study of malaria outbreak in a hotel construction site of Delhi. *Indian J Malariol* 1994 Sep;*31*(3):126–31. PMID:7713268.
https://pubmed.ncbi.nlm.nih.gov/7713268/

181. R C Dhiman , **Sharma VP**. Evaluation of neem oil as Sandfly (Phlebotomus papatasi Scopoli) repellent in an oriental sore endemic area in Rajasthan. *Southeast Asian J Trop Med Public Health*. 1994 Sep;*25*(3):608–10. PMID:7777937.
https://pubmed.ncbi.nlm.nih.gov/7777937/

182. Dua VK, Pant CS, **Sharma VP.** HCH residues in rain water from Hardwar, India. *Bull Environ Contam Toxicol* 1994 Jun;*52*(6):797–801. PMID:7517233. doi: 10.1007/BF00200686.
https://pubmed.ncbi.nlm.nih.gov/7517233/

183. BR Jana-Kara , T Adak, C F Curtis, **Sharma VP**. Laboratory studies of pyrethroid-netting combination to kill mosquitoes. *Indian J Malariol* 1994 Mar;*31*(1):1-11. PMID:7958123.
https://pubmed.ncbi.nlm.nih.gov/7958123/

ABSTRACT

Bioassays of cotton or synthetic netting, impregnated with one of two formulations of deltamethrin or a formulation of lambda-cyhalothrin, showed that the order of merit of these insecticides varied significantly with the type of netting used. Washing reduced the insecticidal power of all combinations of insecticide and netting. Halving the time of exposure and doubling the dose tended to increase the mortality. Different An. stephensi strains varied significantly in susceptibility. Netting (5 to 8 mm mesh) impregnated with deltamethrin was effective in killing mosquitoes which penetrated the netting in search of an animal host.

184. Adak T, Subbarao SK, **Sharma VP**, Rao SR. Lactate dehydrogenase allozyme differentiation of species in the Anopheles culicifacies complex. *Med Vet Entomol* 1994 Apr;*8*(2):137–40. doi:10.1111/j.1365-2915.1994.tb00153.x. PMID:8025321.
https://pubmed.ncbi.nlm.nih.gov/8025321/

ABSTRACT

Genetically controlled enzyme variation exists within and between four sibling species of the Anopheles culicifacies complex of malaria vectors in India. A study on electrophoretic variation of nine enzymes in An. culicifacies sibling species revealed that the lactate dehydrogenase (Ldh) locus has Fast (F) and Slow (S) allozymes distinguishing species A+D from species B+C with a probability of c. 95%.

185. **Sharma VP**. Malaria and AIDS. *Nature* 1994 Jun 30; *369*(6483):700. PMID: 8008054 DOI: 10.1038/369700b0
https://pubmed.ncbi.nlm.nih.gov/8008054/

186. Kumar A, **Sharma VP**, Sumodan PK, Thavaselvam D, Kamat RH. Malaria control utilizing Bacillus sphaericus against Anopheles stephensi in Panaji, Goa. *J Am Mosq Control Assoc* 1994 Dec;*10*(4):534–9. PMID: 7707060
https://pubmed.ncbi.nlm.nih.gov/7707060/

ABSTRACT

In a large malaria endemic area in Panaji city, Goa, India, the weekly application of the biolarvicide Bacillus sphaericus (Strain 101, Serotype H 5a 5b) at the rate of 1 g/m2 in the main Anopheles stephensi larval habitats, viz., curing waters, masonry tanks, and sump tanks (under construction), from April to December 1993 resulted in a sharp decline in the habitat positivity (range 0.13-8.0%) as compared with the rest of the Panaji (range 2.2-30.6%) where temephos (Abate) was used as the larvicide. Bacillus sphaericus spraying also led to a significant decline in anopheline densities in positive habitats (range 0-7.3/10 dips) as compared with control habitats (range 0.9-53.0/10 dips). Concurrently, malaria incidence observed in the experimental area (slide positivity rate [SPR] range 2.3-7.8%; monthly parasite index [MPI] range 0.18-1.44) was lower than in the control area (SPR range 14.3-25.5%; MPI range 1.75-6.12).

187. Pattanayak S, **Sharma VP**, Kalra NL, Orlov VS, Sharma RS. Malaria paradigms in India and control strategies. *Indian J Malariol* 1994 Dec;*31*(4):141–99 PMID: 7556784

https://pubmed.ncbi.nlm.nih.gov/7556784/

ABSTRACT

The paper gives a brief history of malaria control in India through the National Malaria Control Programme (NMCP), National Malaria Eradication Programme (NMEP), implementation of the Modified Plan of Operation (MPO), strengthening of malaria control by launching P. falciparum Containment Programme (PfCP) and the Urban Malaria Scheme (UMS). Making reference to various evaluations of the NMEP, the paper analyses the present malaria situation and brings out reasons demanding change in the strategy of malaria control in consonance with the global malaria control strategy of the World Health Organization (WHO). The epidemiological analysis has revealed that the present adverse malaria situation concentrates mostly under the following five epidemiological paradigms viz. (i) tribal malaria, (ii) rural malaria, (iii) urban malaria, (iv) industrial malaria, and (v) border malaria. Malaria control requires specific approaches and control strategies for each paradigm. We have suggested

changes/augmentation in the organizational set-up beginning from NMEP Directorate to the most peripheral health units. The primary responsibility of malaria prevention and control including cost in developmental projects should be shared by the corporate sectors through intersectoral coordination. Residual problems during maintenance phase of the project would come under the general health services. International and bilateral cooperation increases resources availability. The available tools and their rational use for malaria control in different epidemiological paradigms has been discussed with emphasis on integrated control, selective use of chemical insecticides and adoption of cost-effective and sustainable malaria control methods. In this context, intersectoral collaboration, community participation, training, operational research and health education have been discussed as the vital components for effective malaria control.

188. **Sharma VP**, RC Dhiman. Neem oil as a sandfly (Diptera: Psychodidae) repllent. *J Am Mosq Control Assoc* 1993 Sep;*9(*3):364–6. PMID:8245951. https://pubmed.ncbi.nlm.nih.gov/8245951/

ABSTRACT

The repellent action of neem oil was evaluated against sand flies under laboratory and field conditions. Concentrations of 2% neem oil mixed in coconut or mustard oil provided 100% protection against Phlebotomus argentipes throughout the night under field conditions; against Phlebotomus papatasi it repelled sand flies for about 7 h in the laboratory. Neem oil is an indigenous product and a low-cost alternative for personal protection against sand fly bites

189. **Sharma VP**, Ansari MA. Personal protection from mosquitoes (Diptera: Culicidae) by burning neem oil in kerosene. *J Med Entomol* 1994 May;*31*(3):505–7 PMID:7914543 DOI:10.1093/jmedent/31.3.505 https://pubmed.ncbi.nlm.nih.gov/7914543/

ABSTRACT

The repellent action of neem oil (extracted from the seeds of Azadirachta indica A. Juss) was evaluated on mosquitoes at two villages near Delhi, India. Kerosene lamps containing neem oil were burned in the living rooms, and mosquitoes resting walls or attracted to human bait were collected inside rooms from 1800 to 0600 h. Neem oil (0.01-1%) mixed in kerosene reduced biting of human volunteers and catches of mosquitoes resting on walls in the rooms. Protection was more pronounced against Anopheles than against Culex. A 1% neem oil-kerosene mixture may provide economical personal protection from mosquito bites.

190. K Vasantha, VK Dua, M.S Malhotra, RS Yadav, **Sharma VP**. Population cytogenetic evidence for three sibling species in Anopheles fluviatilis (Diptera: Culicidae). *Ann Entomol Soc Am* 1994 Jan;*87*(1).
https://doi.org/10.1093/aesa/87.1.116

ABSTRACT

Three arrangements of chromosome arm 2 occur as homozygotes, without observable heterozygotes, in populations of Anopheles fluviatilis James. This indicates positive assortative mating between populations having diflFerent arm 2 arrangements and is taken as evidence for three sibling species within A. fluviatilis. This finding confirms an earlier hypothesis that the taxon is a mixture of biological forms, which was indicated by heterogeneity between populations in their malaria transmission potential on the Indian subcontinent. Rearrangement of arm 2 involves two paracentric inversions, 2qx and 2r\ giving three types of arm 2: 2 + q1 + r\ 2q* + r1, and 2 + q1r1. Photomaps of the ovarian polytene chromosomes are presented.

KEYWORDS: fluviatilis; sibling species; cytotaxonomy

191. Valecha N, Srivastava A, **Sharma VP**. Rational approach to the treatment of malaria. *Natl Med J India* 1994 Nov-Dec;*7*(6):281–7. PMID:7841881.
https://pubmed.ncbi.nlm.nih.gov/7841881/

192. **Sharma VP**, and Roop Kumari. Resting and Biting Habits of Anopheles Sundaicus in car Nicobar Island. *Indian Journal of Malariology* 1994 Sept;31: 103–114. PMID: 7713265. https://pubmed.ncbi.nlm.nih.gov/7713265/

ABSTRACT

Resting and biting habits of An. sundaicus were studied in Car Nicobar Island. Results of resting behaviour revealed that although substantial numbers of An. sundaicus rest outdoor, still the species prefer to rest indoors, and much less in human dwellings. High parity rate (73.38%) in An. sundaicus and close contact with man were the factors responsible for high transmission in Car Nicobar. An. sundaicus population in Car Nicobar is susceptible to DDT. Indoor man-biting of An. sundaicus was significantly higher than outdoors and the species showed bimodal biting activity with first peak between 2130 to 2230 hrs and second between 0130 to 0230 hrs. An. sundaicus preferred to feed on people's legs and hands. Due to complex behaviour of An. sundaicus, an integrated approach comprising (i) chemical, (ii) bioenvironmental control, and (iii) personal protection methods was suggested to interrupt malaria transmission in Car Nicobar Island.

193. Dua VK, Sarin R, **Sharma VP**. Sulphadoxine concentrations in plasma, red blood cells and whole blood in healthy and Plasmodium falciparum malaria cases after treatment with Fansidar using high-performance liquid chromatography. *J Pharm Biomed Anal* 1994 Oct;*12*(10):1317–23. doi: 10.1016/0731-7085(94)00061-1. PMID: 7841229 https://pubmed.ncbi.nlm.nih.gov/7841229/

ABSTRACT

A reversed-phase high-performance liquid chromatographic method using acetonitrile-methanol-(1M) perchloric acid-water (30:9:0.8:95, v/v/v/v) at a flow of 1.5 ml min-1 on mu-Bondapak C18 column with UV (254 nm) detection has been developed for the separation of sulphadoxine, sulphalene and sulphamethoxazole from other antimalarials. Calibration curves were linear in the range 0.5-100 micrograms ml-1. The limit of quantitation was 50 ng ml-1. Within-day and day-to-day coefficients of variation

averaged 2.1 and 6.45%, respectively. The extraction recovery of sulphadoxine from plasma, red blood cells and whole blood was 90.28, 92.05 and 94.69%, respectively. The method has been used for the determination of sulphadoxine concentrations in plasma, red blood cells and whole blood of eight healthy and 50 Plasmodium falciparum malaria cases after administration of two tablets of Fansidar. Mean sulphadoxine concentration in plasma was higher than red blood cells or whole blood. Sulphadoxine concentration in plasma and whole blood of P. falciparum malaria cases was significantly higher as compared to healthy volunteers while it was the same in red blood cells. Sulphadoxine was absorbed much less in red blood cells than in plasma or whole blood.

194. Roy A, **Sharma VP**, Chauhan VS. The use of peptide ELISA in determining malaria endemicity. *J Immunol Methods* 1994 Jan 3;*167*(1-2):139–43. doi: 10.1016/0022-1759(94)90083-3. PMID: 8308272.
https://pubmed.ncbi.nlm.nih.gov/8308272/

ABSTRACT

A study was undertaken with the objective to find out whether a reliable transmission index could be established by a simple peptide ELISA. This would be important to evaluate the success of the bioenvironmental malaria control programmes implemented in endemic areas like the Haldwani and Shankargarh districts of Uttar Pradesh, India. We have estimated antimalarial antibodies against three synthetic peptides derived from blood stage antigens of Plasmodium falciparum and against P. falciparum crude antigen by enzyme-linked immunosorbent assay (ELISA), in children and adults. We have found that while all the peptides react with serum antibodies, as does the whole crude blood stage antigen, a nonapeptide from RESA antigen gave the most uniform results. Our results suggest that synthetic peptides, which are easy to obtain and can be fully characterized, may offer a simple way to measure malaria endemicity.

195. N Nanda, H Joshi, SK Subbarao, **Sharma VP**. Two site-immunoradiometric assay (IRMA): detection efficiency and procedural modification. *J Am Mosq Control Assoc* 1994 Jun;*10*(2 Pt 1):225–227. PMID: 8965070.
https://pubmed.ncbi.nlm.nih.gov/8965070/

ABSTRACT

A 2-site immunoradiometric assay (IRMA) has been done using Anopheles stephensi fed on Plasmodium vivax blood through parafilm to ascertain at what time in the sporogonic cycle circumsporozoite (CS) antigen can be detected, and to detect CS antigen in mosquitoes squashed on filter paper (FP) and cellulose acetate membrane (CAM). The CS antigen was detectable only in mature oocysts, a day prior to sporozoite liberation, and in salivary gland sporozoites. Dissected sporozoites adsorbed on FP/CAM also can be analyzed by IRMA for Plasmodium species identification.

1995

196. Singh N, Shukla MM, Uniyal VP, **Sharma VP**. ABO blood groups among malaria cases from district Mandla, Madhya Pradesh. *Indian J Malariol* 1995 Jun; *32*(2):59–63. PMID: 7589729

https://pubmed.ncbi.nlm.nih.gov/7589729/

ABSTRACT

A total of 2095 patients with fever were tested for malaria and classified according to ABO blood groups. Only 696 cases were malaria positive. While blood group A, B and O were equally susceptible to malaria infection, AB blood group had less number of persons with malaria parasites. A significantly lower frequency of Plasmodium falciparum was observed among individuals with blood groups A and O. In other two blood groups B and AB, no difference in P. vivax and P. falciparum proportions were observed. A two-year study showed that the frequency of repeated attacks between all blood groups was similar.

197. Roy A, Biswas S, Kabilan L, **Sharma VP**. Applications of simple peptide ELISA for stratification of malaria endemicity. *Indian J Malaria* 1995 Dec; *32*(4): 164–73 PMID: 8867062

https://pubmed.ncbi.nlm.nih.gov/8867062/

ABSTRACT

A serological investigation was conducted in north India to determine malaria endemicity based on the antibody levels against a nonapeptide RI (EENVEHDA-Cys) from the P. falciparum antigen Pf 155/RESA. P. falciparum sonicated crude antigen was also used in the study. Subjects of all age groups from various strata of malaria endemicity were included in this study. A total of 4273 finger prick blood samples from 49 villages of five districts were collected during January to March 1991 which is a non-transmission season and the antibody levels were estimated by ELISA. Although a good correlation was found between the antibody titre to the RI peptide and that to the crude antigen, the most consistent results were obtained with the RI peptide. When compared with the annual parasite index (API) values, an established method for defining malaria endemicity, mean anti-RI antibody titres obtained from several villages within a single zone correlated ($r = 0.94$, $p = 0.023$) with mean API value of the area. Thus, our results suggest that by using the RI peptide as antigen in seroepidemiology, it is possible to stratify malaria endemicity. We didn't distinguish between endemicity of Pv and Pf since each area experiences cycle of transmission of P. vivax followed by P. falciparum and our sera were from individuals having no fever.

198. Mittal PK, Adak T, **Sharma VP.** Bioefficacy of six neem products against mosquito larvae .*Pesticide Research Journal* 1995;*7* (1):35–38. https://www.indianjournals.com/ijor.aspx?target=ijor:prj&volume=7&issue=1&article=004

ABSTRACT

Bioassay tests were carried out to determine the efficacy of six neem products against early fourth instar larvae of Anopheles stephensi, a vector of malaria, Culex quinquefasciatus, vector of rilariasis and Aedes aegpti, vector ro fengue eever ri nndia. Neem products showed poor rarvicidal lctivity within 24 hr of exposure but some of these products showed good insect growth regulator (IGR) activity. Larvae of An. stephensi in general were most tusceptible while those of Aedes aegypti were reast stsceptible to different neem products. Among the various products tested, Neemark, was most

effective against Anstephensi (EC50 = 0.0005%) while Neemark II was most effective against Culex quinquefasciatus (EC50 =0.0023%) and Aedes aegypti) (EC50 =0.0055%).

199. Shukla RP, Pandey AC, Kohli VK, Ojha VP, **Sharma VP**. Bionomics of vector anophelines in District Naini Tal, Uttar Pradesh. *Indian J Malariol* 1995 Dec;*32*(4):153–63. PMID:8867061
https://pubmed.ncbi.nlm.nih.gov/8867061/

ABSTRACT

Breeding behaviour and seasonal prevalence of vector anopheline in different habitats associated with rice land agroecosystem of terai and bhabar area of District Naini Tal was studied from July 1992 to June 1994. Adult prevalence in both the areas shows two distinct An. fluviatilis peaks in the months of March and October and the breeding places for the species were pokhars in bhabar and stream and irrigation drains in terai. Prevalence of adult An. culicifacies was observed during July to August in bhabar and April and August in terai. In bhabar high immature density of An. culicifacies was noted mainly in tanks, pokhars and paddy fields (early transplantation period). In terai high immature density of An. culicifacies was noted in stream, while low in paddy fields. Higher prevalence of immatures and adult anopheline vectors coincide with peak malaria incidence in both the areas. In bhabar in the months of August and September large number of malaria cases were contributed by An. culicifacies and in November by An. fluviatilis. In terai, malaria cases in April and from June to September were contributed by An. culicifacies, whereas An. fluviatilis might be responsible for transmission in October.

200. Kumar, Ashwani, Thavaselvam, V.and **Sharma, V.P.** Bitting behavior of disease vectors in Goa. *J Parasite Disease* 1995;*19*(1):73–76.

201. Shukla MM, Singh N, Singh MP, Tejwani BM, Srivastava DK, **Sharma VP.** Cerebral malaria in Jabalpur, India. *Indian J Malariol* 1995;32(2):70–5. PMID:758973
https://pubmed.ncbi.nlm.nih.gov/7589731/

ABSTRACT

A total of 1783 patients were admitted in Govt. Medical College Hospital, Jabalpur with fever in 1993. Out of these 152 (8.5%) patients had cerebral malaria, of which 39 (25.6%) patients died. Age and sex-wise break-up indicated that males suffered more ($p < 0.01$) from malaria and majority of patients belonged to 16-40 yrs age-group. Mortality was significantly higher in patients with hyperparasitaemia, hypoglycaemia and delayed diagnosis and treatment. Comatose condition was the main determinant of death.

202. Nagpal BN, Srivastava A, **Sharma VP.** Computer based Identification of Indian Anopheles. *Mosquitoes System* 1995;27:153–154.

203. Kumar A, **Sharma VP**, Thavaselvam D, Sumodan PK. Control of Anopheles stephensi breeding in construction sites and abandoned overhead tanks with Bacillus thuringiensis var. israelensis. *J Am Mosq Control Assoc* 1995 Mar;*11*(1):86–9. PMID: 7616196
https://pubmed.ncbi.nlm.nih.gov/7616196/

ABSTRACT

Bacillus thuringiensis (H-14), strain 164 (Bactoculicide) when applied at 1 g/m2 surface area successfully controlled Anopheles stephensi breeding in construction sites, abandoned overhead tanks, and curing waters. Subsequent to application, no pupal production was observed in these habitats for 3, 18, and 21 days, respectively. Based on these findings, inclusion of Bactoculicide in the bioenvironmental vector control strategy is suggested and fortnightly spraying in construction sites at 1 g/m2 surface area is recommended for the containment of vector breeding. However, frequent retreatment of abandoned overhead tanks would be uneconomical and operationally impractical.

204. Nagpal BN, Srivastava A, **Sharma VP**. Control of mosquito breeding using wood scrapings treated with neem oil. *Indian J Malariol* 1995 Jun;*32*(2):64–9. PMID: 7589730
https://pubmed.ncbi.nlm.nih.gov/7589730/

ABSTRACT

Wood scrapings were given shape of a ball and soaked in 5, 10 and 20% neem (Azadirachta indica) oil diluted in acetone. Control of Anopheles stephensi and Aedes aegypti breeding in water storage overhead tanks (OHTs) with the application of these balls was achieved for 45 days. Two balls soaked in 5% neem oil produced the best results among other concentrations tested.

205. **Sharma VP** and Yadav RS. Cyfluthrin impregnated mosquito nets to control malaria in mining settlements in Orissa, India. *Public Health* 1995;*12*:8–17.

206. Jana-Kara BR, Jihullah WA, Shahi B, Dev V, Curtis CF**, Sharma VP**. Deltamethrin impregnated bednets against Anopheles minimus transmitted malaria in Assam, India. *J Trop Med Hyg* 1995 Apr;*98*(2):73–83. PMID: 7714940 https://pubmed.ncbi.nlm.nih.gov/7714940/

ABSTRACT

Of the 20 Anopheles species caught in villages in Sonapur, Assam, only An. minimus was incriminated as a malaria vector by finding sporozoites in the salivary glands. It was found to be endophagic and endophilic in Assam and because its biting peaked after midnight it was a suitable target for insecticide impregnated bednets. After the withdrawal of DDT spraying and collecting a year's baseline data, deltamethrin impregnated nets were distributed in 3 villages, untreated nets were distributed in 6 villages and 3 were held as untreated controls. The population of each of these groups of villages was about 1700. The nets were well received by the local tribal population. Human landing catches with baits unprotected or under partially lifted nets showed that the nets provided a high degree of personal protection against all the local species of human biting mosquito. In addition, there was evidence for suppression of the An. minimus population in a village with treated nets. Malaria was monitored by weekly active surveillance in all the villages. In the untreated control villages the slide positivity rate and monthly parasite index rose significantly during the trial. In the villages with untreated nets, these parameters showed no significant change, but in the villages with

treated nets they declined significantly. On the basis of these results, the widespread distribution of impregnated nets was recommended to the state health authorities.

207. Dua VK, Nagpal BN, **Sharma VP**. Deltamethrin of HCH and DDt in finger prick whole blood dried on filter paper and its field application for monitoring their concentrations in the Blood. *Indian J Malaria* 1995 Jun;*32*(2):47–53. DOI:10.1007/s001289900008. PMID:9026157
http://dx.doi.org/10.1007/s001289900008

208. Singh N, Tyagi AK, **Sharma VP.** Drug resistance plasmodium falciparum in Mandla District, Madhya Pradesh. *Indian J Malariol* 1995 Dec;*32*(4):174–177. PMID:8867063
https://pubmed.ncbi.nlm.nih.gov/8867063/

209. Mittal PK, Adak Tand **Sharma VP**. Effect of water pH on the activity of Bacillus sphaericus against mosquitoes. *National Academics Science Letters* 1995;*18*(9&10):189–191.

210. Ansari MA, **Sharma VP**, Mittal PK, Razdan RK. Efficacy of two flowable formulations of Bacillus sphaericus against larvae of mosquitoes. *Indian J Malariol* 1995 Jun;32(2):76–84. PMID: 7589732
https://pubmed.ncbi.nlm.nih.gov/7589732/

ABSTRACT

Laboratory evaluation revealed that the Spherimos and Vectolex formulations of Bacillus sphaericus produced 97 and 100% larval mortality respectively in Culex quinquefasciatus at a dose as low as 0.008 ml/sq m as against 93 and 97% mortality respectively at 1 ml/sq m in Anopheles stephensi. However, in An. culicifacies similar level of mortality was not observed even at 10 ml/sq m of these formulations. Field evaluation revealed 100% reduction of Cx. quinquefasciatus larvae for 2-3 weeks in pools and wells with single application of Spherimos @ 2 ml/sq m as against 95.4% reduction @ 10 ml/sq m in

irrigation channel for one week. Vectolex @ 10 ml/sq m provided 99-100% reduction of Cx. quinquefasciatus larvae up to 9 weeks in wells and 1 week in channels.

211. Srivastava HC, Kant R, Bhatt RM, Sharma SK, **Sharma VP**. Epidemiological observations on malaria in villages of Buhari PHC, Surat, Gujarat. *Indian J Malariol* 1995 Dec;*32*(4):140–52. PMID: 8867060
https://pubmed.ncbi.nlm.nih.gov/8867060/

ABSTRACT

Investigations were carried out in the villages of Buhari PHC, Surat district, Gujarat to determine factors responsible for high prevalence of P. falciparum. The area is well-known for sugarcane cultivation, industrialization and frequent movement of labourers. The slide positivity rate (44.24%) and P. falciparum infections (95.37%) were significantly high. The children of 5-9 yrs of age group suffered maximum from malaria. The infection in children was found associated with splenomegaly also. High falciparum infection (82.35%) was found in labourers camping near villages out of which 90% afebrile cases were reported which were silent carriers and source of transmission. Chloroquine was effective in 75% cases despite of existence of resistant falciparum strain. Among seven anopheline species encountered, An. culicifacies was predominant and found breeding in most of the breeding sites. The status of the insecticide spray and its receptivity among the community were poor. The investigation led to the conclusion that adequate measures are required to deal with migratory labourers, improper insecticide coverage, poor surveillance and mass ignorance.

212. Sharma SK, Dua VK, **Sharma VP**. Field studies on the mosquito repellent action of neem oil. *Southeast Asian J Trop Med Public Health* 1995 Mar; *26*(1):180–2. PMID: 8525409.
https://pubmed.ncbi.nlm.nih.gov/8525409/

ABSTRACT

Repellent action of neem oil was evaluated against different mosquito species. 2% neem oil mixed in coconut oil provided 96-100% protection from anophelines, 85% from Aedes, 37.5% from Armigeres whereas it showed wide range of efficacy from 61-94% against Culex spp. Therefore, neem oil can be applied as a personal protection measure against mosquito bites.

213. Ghosh SK, Yadav RS, Das BS, **Sharma VP**. Influence of nutritional and haemoglobin status on malaria infection in children. *Indian J Pediatr* 1995 May-Jun;*62*(3):321–6. doi: 10.1007/BF02753595. PMID: 10829885
https://pubmed.ncbi.nlm.nih.gov/10829885/

ABSTRACT

Anaemia and malnutrition have been suggested to confer some degree of protection against malaria infection. Therefore, the influence of nutritional status as assessed anthropometrically and that of haemoglobin level on the incidence of malaria and the degree of parasitaemia was studied in 330 children in the age range of 1-9 years in Bisra block near Rourkela in Orissa state. Moderate to severe malnutrition as assessed from percentage of ideal weight was found in 48.8% (161/330) of children but only 8.8% (29/330) of children had some degree of malnutrition when assessed as weight for height indicating presence of chronic malnutrition. Similarly, 197 children (59.7%) had various grades of anaemia as estimated by haemoglobin level prevalence of malaria on initial examination was 27.6% (91/330), while incidence of clinical malaria in children during the year of study was 250/1000. There was no statistical difference in the Prevalence/incidence of malaria or severity of P. falciparum parasitaemia at different haemoglobin or nutritional levels ($p > 0.05$). No child died or developed severe complications requiring hospitalization. Therefore, anaemia or malnutrition do not appear to provide any protection against malaria or degree of parasitaemia in the children around Rourkela.

214. Dev V and **Sharma VP.** Persistent transmission of malaria in Sonapur PHC Kamrup district Assam. *J Parasitic Disease* 1995;*19*:65-68.

215. Singh N, Shukla MM, Srivastava R, **Sharma VP**. Prevalence of malaria among pregnant and non-pregnant women of district Jabalpur, Madhya Pradesh. *Indian J Malariol* 1995 Mar;*32*(1):6–13. PMID: 8549840
https://pubmed.ncbi.nlm.nih.gov/8549840/

ABSTRACT

In the study period of two years 145 pregnant and 79 non-pregnant women with malarial infection were recorded. Plasmodium falciparum was the most prevalent species accounting for 72% of the total malaria infection in pregnant women while, in non-pregnant women it accounted for 58%. Results were analysed according to the species to which the parasite belonged, period of gestation and parity. While cerebral malaria, abortions, intrauterine foetal death, maternal anaemia were common in pregnant patients, only one neonatal death was recorded. Malaria parasites were not found in infants born to mothers with very heavy parasitaemia at the time of delivery. Even though pregnant women of all age groups and parity remain highly susceptible to malaria throughout pregnancy and puerperium from this area, some striking differences like malaria infection more prevalent in primigravidas than multigravidas and in second trimester than in third trimester were noticed in comparison to northern India. Results emphasize the need to target malaria control for this group of women. Failure to clear parasitaemia after chloroquine administration in P. falciparum was common in both pregnant and non-pregnant women. This is an area, where there is a great need to introduce effective malaria interventions. As chloroquine resistant parasites spread a better understanding of the problem is needed leading to a few chemotherapeutic options for pregnant women.

216. Dua VK, Nagpal BN, **Sharma VP**. Repellent action of neem cream against mosquitoes. *Indian J Malariol* 1995 Jun;*32*(2):47–53. PMID:7589727.
https://pubmed.ncbi.nlm.nih.gov/7589727/

ABSTRACT

Neem cream was used as mosquito repellent to provide protection against Aedes albopictus, Ae. aegypti, Culex quinquefasciatus, Anopheles culicifacies and An. subpictus mosquitoes. The application of neem cream on exposed body parts @2.0 gm/person showed 78 (range 65-95), 89 (range 66-100) and 94.4 (range 66-100) per cent protection against Aedes, Culex and Anopheles mosquitoes respectively. Significant difference was observed between neem cream treated and untreated group of population for Aedes mosquitoes ($p < 0.001$). Application of neem cream was found to be a safe and suitable alternative to insecticide impregnated coils for personal protection against mosquitoes and one application was 68% effective for four hours.

217. Padhan K, and **Sharma VP**. Reproductive biology of mosquitoes larvivorous fish Guppy, Poeclia reticulata . *Indian Journal Exptl. Biology* 1995;*33*:440–443.

218. Adak T, Mittal PK, Raghavendra K, Sarala K, Subbarao MA Ansari and **Sharma VP.** Resistance to Bacillus sphaericus in Culex quinquefasciatus Say 1823*Current Science* 1995; *69*(8): 695–698
https://www.jstor.org/stable/24097264

ABSTRACT

Biological control of Culex quinquefasciatus using Bacillus sphaericus was considered a practical solution because of its specific and prolonged killing action against mosquito larvae. To study the feasibility of B. sphaericus ('Spherix') in mosquito control, multicentric trials were undertaken. Initially, B. sphaericus was very effective but within a year, after 20–25 rounds of application, field populations of Cx. quinquefasciatus developed resistance up to 150-fold. Genetic studies revealed that resistance was recessive, autosomal and controlled by more than one gene. This is the first report on nature and mode of inheritance of resistance against B. sphaericus in mosquitoes.

219. **Sharma VP**. Return of parasitic Disease. *Journal Parasite Disease* 1995;*19*: 1–3.

220. Yadav RS and **Sharma VP**. Sulfadoxine/Pyrimethamine resistant Plasmodium falciparum in a malaria endemic zone of india. *Mosquito Borne Disease* Bull.1995.

221. Sharma Sk, Nanda S, and **Sharma VP**. Studies on the bionomics of Anopheles fluviatilis SENSO LATO and the sibling species Composition in the Foothills of Shiwalik range (Uttar Pradesh) India. *Southeast Asian J. of Tr. Med and Public Health* 1995;*26* (3)**.**

ABSTRACT

Bionomics of Anopheles fluviatilis sensu lato in the foothills of Shiwalik range was studied in two areas with varied topographical features. In both the areas density of An. fluviatilis was high and adults were found testing indoors predominantly in cattlesheds. Cytological examination of An. fluviatilis revealed that sibling species T and U were sympatric in the study villages. An. fluviatilis s.l. and sibling species T and U were almost totally zoophagic and no sporozoite positive mosquitos were found. Thus, the study indicates that An. fluviatilis is not playing a role in the transmission of malaria and there are no distinct biological variations between species T and U in the study areas.

222. Mishra AK, Singh N, **Sharma VP**. Use of neem oil as a mosquito repellent in tribal villages of mandla district, madhya pradesh. *Indian J Malariol* 1995 Sep;*32*(3):99–103. PMID:8936291
https://pubmed.ncbi.nlm.nih.gov/8936291/

ABSTRACT

A field study was carried out to evaluate the mosquito repellent action of neem (Azadirachta indica) oil in tribal forested villages of District Mandla. Various concentrations of neem oil mixed in coconut oil (1-4%) were applied to the exposed body parts of human volunteers. Results revealed 81-91% protection during 12 h period of observation from the bites of anopheline mosquitoes. Neem oil is an indigenous product and a practical solution to curtail mosquito nuisance.

Titles: A-Z

1996

223. Nanda N, Joshi H, Subbarao SK, Yadav RS, Shukla RP, Dua VK, **Sharma VP**. Anopheles fluviatilis complex: host feeding patterns of species S, T, and U. *J Am Mosq Control Assoc* 1996 Mar;*12*(1):147–9. PMID:8723275.
https://pubmed.ncbi.nlm.nih.gov/8723275/

ABSTRACT

The host feeding specificity of Anopheles fluviatilis sibling species S, T, and U was determined by analyzing blood meal source using countercurrent immunoelectrophoresis. A distinct difference in the feeding patterns was observed among these species. Species S was found to be predominantly anthropophagic with 91% of the population having fed on human blood. In contrast, species T and U were either exclusively or primarily zoophagic.

224. Dua VK , Kar PK, **Sharma VP**. Chloroquine resistant Plasmodium vivax malaria in India. *Case Reports Trop Med Int Health* 1996 Dec;*1*(6):816–9 PMID:8980595 DOI: 10.1111/j.1365-3156.1996.tb00116.x.
https://pubmed.ncbi.nlm.nih.gov/8980595

ABSTRACT

In India, 1.2-1.5 million new cases of Plasmodium vivax occur each year. These cases are successfully treated with 600 mg chloroquine (adult dose). We report the results of malaria treatment of a 13-year-old girl from the Indian Oil Corporation (IOC), Mathura, India who contracted P. vivax infection. The infection failed to respond to 2 cycles of standard chloroquine therapy. The concentrations of chloroquine were monitored with high performance liquid chromatography (HPLC). The plasma and whole blood chloroquine concentrations were 260 and 106 micrograms/l respectively, while a 15 micrograms/l plasma concentration is considered lethal to P. vivax. Resistance in P. vivax to chloroquine was found at the IOC, Mathura.

225. Kumar A, **Sharma VP**, Thavaselvam D, Sumodan PK. Clinical trials of a new immunochromatographic test for diagnosis of plasmodium falciparum, malaria in Goa. *Indian J Malariol* 1996 Dec;*33*(4):166–72. PMID: 9125830.
https://pubmed.ncbi.nlm.nih.gov/9125830/

ABSTRACT

Plasmodium falciparum histidine rich protein-2 (PfHRP-2) based immunochromatographic test kit (ICT Malaria Pf) for the rapid diagnosis of P. falciparum malaria was evaluated at the clinic of Malaria Research Centre (Field Station), Goa. Of the 98 febrile patients screened, 22 were ICT positive for P. falciparum. Simultaneous microscopic examination of the blood smears of these ICT positive patients showed that 20 were positive for P. falciparum alone, whereas one had mix infection of both P. vivax and P. falciparum suggesting 100% sensitivity. Only one slide negative patient who had taken 600 mg chloroquine the previous day was positive in the ICT. Out of the remaining 76 blood smears, 41 showed P. vivax infection and none cross-reacted with P. falciparum HRP-2 antigen and were ICT negative except one mix infection case in which P. vivax and P. falciparum infections occurred concomitantly suggesting species specificity of 98.7%. The positive predictive value, negative predictive value and efficacy of the ICT were 95.4, 100 and 98.9% respectively. The band intensity of the ICT positive cases significantly correlated with P. falciparum parasitaemia ($p < 0.01$). The usefulness and the disadvantages of this diagnostic kit have been discussed in context of prevailing malaria situation in the country.

226. Kumar A, **Sharma VP**, Thavaselvam D, Sumodan PK, Kamat RH, Audi SS, Surve BN. Control of Culex quinquefasciatus with Bacillus sphaericus in Vasco City, Goa. *J Am Mosq Control Assoc* 1996 Sep;*12*(3 Pt 1):409–13. PMID:8887219
https://pubmed.ncbi.nlm.nih.gov/8887219/

ABSTRACT

In a locality (Sada) of Vasco City, Goa, India, that was highly infested with mosquitoes, weekly spraying of Bacillus sphaericus (strain 101, serotype H 5a 5b) at the rate of 1

g/m2 in polluted water habitats, viz, surface drains, cess pits, cess pools, and septic tanks, resulted in a sharp decline in the immature and adult populations of Culex quinquefasciatus. The per man-hour adult densities, percent habitat positivity, and immature densities were significantly lower ($P < 0.001$) in the treated area compared to the control area throughout the study period.

226. **(A). Sharma VP**. Control of Vector Borne disease in excreta and Wastewater system Proceedings national academy of sciences, India, 66(B), 1996.

227. Dua VK, Pant CS, **Sharma VP**, Pathak GK. Determination of HCH and DDT in finger-prick whole blood dried on filter paper and Its Field Application for monitoring concentrations in blood. *Bull Environ Contam Toxicol* 1996 Jan;*56*(1):50–57. PMID:9026157 DOI: 10.1007/s001289900008.
https://pubmed.ncbi.nlm.nih.gov/9026157/

228. Dua VK, Pant CS, **Sharma VP**. Determination of levels of HCH and DDT in soil, water and whole blood from bioenvironmental and insecticide-sprayed areas of malaria control. *Indian J Malariol* 1996 Mar;*33*(1):7–15. PMID:8690133
https://pubmed.ncbi.nlm.nih.gov/8690133/

ABSTRACT

Concentrations of HCH and DDT in soil, water and whole blood were determined in two areas under malaria control. These were, (i) bioenvironmental control of malaria at BHEL, and (ii) residual spraying of insecticides in rural and urban area of Bahadrabad PHC of Hardwar district. Mean concentrations of HCH in soil and whole blood samples from BHEL was 2.26 micrograms/kg and 1.20 micrograms/l and from Bahadrabad 61.12 micrograms/kg and 24.3 micrograms/l respectively. Similarly, the mean concentration of DDT in soil and whole blood from BHEL was 3.68 micrograms/kg and 4.71 micrograms/l, while in Bahadrabad 270.51 micrograms/kg and 38.13 micrograms/l respectively. HCH and DDT were never detected in any water samples from BHEL area, while the mean concentration of these compounds in water of Bahadrabad area was 0.18

and 0.07 microgram/l respectively. Residual level of HCH and DDT were 27 and 73.5 times higher in soil and 20.2 and 8.1 times higher in whole blood samples from Bahadrabad as compared to their corresponding values from BHEL respectively.

229. **Sharma VP** and N Valecha. Diagnosis of malaria. *Family Med. Ind* 1997;*1*: 11-15.

230. Singh N, Singh OP, **Sharma VP**. Dynamics of malaria transmission in forested and deforested regions of Mandla District, central India (Madhya Pradesh). *J Am Mosq Control Assoc* 1996 Jun;*12*(2 Pt 1):225–34. PMID: 8827597.
https://pubmed.ncbi.nlm.nih.gov/8827597/

ABSTRACT

A longitudinal malaria study was undertaken in 1990-91 in 2 adjacent ecological zones in central India: villages in forest and villages away from the forest. The prevalence of Anopheles species varied widely between the 2 ecological settings. In the villages in forest, Anopheles culicifacies and An. fluviatilis were mainly exophilic, whereas in the villages away from forest, An. culicifacies was predominantly endophilic and An. fluviatilis was equally prevalent both indoors and outdoors. The seasonal patterns of malaria transmission were also different between the 2 zones. Plasmodium falciparum was the dominant parasite species in the villages in forest, whereas malaria infection was mainly due to Plasmodium vivax in the villages away from forest. The annual parasite incidence was high in the villages in forest. The failure to control malaria in forested areas is rooted in the terrain and a variety of poorly understood sociological factors.

231. **Sharma VP**, Nagpal BN, Srivastava A, Adiga S, Manavalan P. Estimation of larval production in Sanjay Lake and its surrounding ponds in Delhi, India using remote sensing technology. *Southeast Asian J Trop Med Public Health* 1996 Dec;*27*(4):834–40. PMID: 9253893
https://pubmed.ncbi.nlm.nih.gov/9253893/

ABSTRACT

A feasibility study to use remote sensing techniques for estimation of mosquito production in Sanjay lake in east Delhi was carried out. Besides the Sanjay lake, larval production for 12 surrounding remote sensing identifiable ponds was also estimated. Inspite of some limitations the technique is very useful for rapid mapping of major breeding sites, recording temporal changes and estimation of larval production in a cost effective manner in terms of survey cost and time

232. Dua VK, Kumari R, **Sharma VP**. HCH and DDT contamination of rural ponds of India. *Bull Environ Contam Toxicol* 1996 Oct;*57*(4):568–74. PMID: 8694874 DOI: 10.1007/s001289900228
https://pubmed.ncbi.nlm.nih.gov/8694874/

233. Dua VK, Kar PK, Sarin R, **Sharma VP**. High-performance liquid chromatographic determination of primaquine and carboxyprimaquine concentrations in plasma and blood cells in Plasmodium vivax malaria cases following chronic dosage with primaquine. *J Chromatogr B Biomed Appl* 1996 Jan 12;*675*(1):93–8. PMID:8634775. doi:10.1016/0378-4347(95)00357-6.
https://pubmed.ncbi.nlm.nih.gov/8634775/

ABSTRACT

A reversed-phase HPLC method using acetonitrile-methanol-1 M perchloric acid-water (30:9:1:95, v/v) at a flow-rate of 1.5 ml/min on a mu-Bondapak C18 column with UV detection at 254 nm was developed for the separation of primaquine, its major metabolite carboxyprimaquine and other metabolites such as N-acetylprimaquine, 4-hydroxyprimaquine, 5-hydroxyprimaquine, 5-hydroxy-6-methoxyprimaquine, demethylprimaquine and 6-methoxyprimaquine, and also other antimalarials. The calibration graphs were linear in the range 0.025-100 micrograms/ml for primaquine and 4-1000 micrograms/ml for carboxyprimaquine. The within-day and day-to-day coefficients of variation averaged 3.65 and 6.95%, respectively, for primaquine and 3.0 and 7.52%, respectively for carboxyprimaquine in plasma. The extraction recoveries for

primaquine and carboxyprimaquine were 89 and 83%, respectively. The mean carboxyprimaquine concentration was much higher in plasma and blood cells of Plasmodium vivax patients than that in plasma from healthy subjects. The carboxyprimaquine level was also higher in blood cells than plasma whereas the primaquine concentration was the same in both cases.

234. Singh N, Mishra AK, Curtis CF and **Sharma VP**. Influence of moonlight on light trap catches of the malaria vector anopheles culcifacies in Central India. *Bull. Entomol. Res* 1996 Aug;*86*(4):475–479. PMID:1431859.
https://doi.org/10.1017/S0007485300035057

ABSTRACT

A significant effect of moon phase on light-trap catches of Anopheles species was observed during a longitudinal study carried out in a forested belt of Madhya Pradesh, India, inhabited by tribal people. However, moon phase does not seem to have any effect on the proportion of adult Anopheles culicifacies Giles in the total catch, or the parity rate in this species, which is the vector responsible for perennial transmission of malaria in the area.

235. Adak T, Wattal S, **Sharma VP**. Inheritance and linkage of aspartate aminotransferase in Anopheles stephensi. *Biochem Genet* 1996 Oct;*34*(9-10):363–6. PMID: 8978908 doi: 10.1007/BF00554411.
https://pubmed.ncbi.nlm.nih.gov/8978908/

236. Sharma VP and Devi U. In vitro sensitivity of Indian isolates of Plasmodium falciparum to antimalrials. *Journal of Parasite1996*;1(*20)*:61–64.

237. **Sharma VP.** Malaria: cost to India and future trends. *Southeast Asian J Trop Med Public Health* 1996 Mar;*27*(1):4–14. PMID: 9031392.
https://pubmed.ncbi.nlm.nih.gov/9031392/

ABSTRACT

A study of the economic loss due to malaria and its future trends revealed that malaria in India was responsible for economic loss between US$ 0.5 to 1.0 billion annually. The study also brought out that malariogenic potential of the country is increasing, and new malaria paradigms have been established requiring new approaches for its control. Unless this trend is checked losses due to malaria will increase in the coming decades. Effective malaria control requires immediate remedial measures to prevent environmental degradation conductive to vector proliferation; and renewed attack on malaria based on local epidemiological, entomological and social determinants. The first requirement for such an action is a reliable data base, both on the malariometric indices and the causative factors. Research therefore should be intensified to fill the gaps, generate new knowledge, disseminate malaria information as widely as possible and provide training for success in malaria control by the implementation of the global malaria control strategy.

238. Dua VK, Kar PK, Sarin R, **Sharma VP**. Primaquine and Carboxyprimaquine cxoncentrations in Plasma and red blood cells in Plasmodium Vivax malaria cases foillowing primaquine chronic dosage using high performance liquid Chromatography. *J Chromatographic B Biomed* Appl 1996, Jan 12; *675*(1):93–98. PMID: 8634775 DOI: 10.1016/0378-4347(95)00357-6
https://pubmed.ncbi.nlm.nih.gov/8634775/

239. Dua VK, Gupta, Pandey AC, **Sharma VP**. Repellency of Lantana camara (Verbenaceae) flowers against Aedes mosquitoes. *J Am Mosq Control Assoc 1996 Sep;12(3 Pt 1):406-8.* PMID: 8887218
https://pubmed.ncbi.nlm.nih.gov/8887218/

ABSTRACT

The repellent effect of Lantana camara flowers was evaluated against Aedes mosquitoes. Lantana flower extract in coconut oil provided 94.5% protection from Aedes albopictus and Ae. aegypti. The mean protection time was 1.9 h. One application of Lantana flower

can provide more than 50% protection up to 4 h against the possible bites of Aedes mosquitoes. No adverse effects of the human volunteers were observed through 3 months after the application.

240. **VP Sharma**. Re-emergence of malaria in India. *Indian J Med Res* 1996 Jan;*103*:26–45. PMID: 8926025.
https://pubmed.ncbi.nlm.nih.gov/8926025/

ABSTRACT

Malaria was nearly eradicated from India in the early 1960s but the disease has re-emerged as a major public health problem. Early set backs in malaria eradication coincided with DDT shortages. Later in the 1960s and 1970s malaria resurgence was the result of technical, financial and operational problems. In the late 1960s malaria cases in urban areas started to multiply, and upsurge of malaria was widespread. As a result in 1976, 6.45 million cases were recorded by the National Malaria Eradication Programme (NMEP), highest since resurgence. The implementation of urban malaria scheme (UMS) in 1971-72 and the modified plan of operation (MPO) in 1977 improved the malaria situation for 5-6 yr. Malaria cases were reduced to about 2 million. The impact was mainly on vivax malaria. Easy availability of drugs under the MPO prevented deaths due to malaria and reduced morbidity, a peculiar feature of malaria during the resurgence. The Plasmodium falciparum containment programme (PfCP) launched in 1977 to contain the spread of falciparum malaria reduced falciparum malaria in the areas where the containment programme was operated but its general spread could not be contained. P. falciparum showed a steady upward trend during the 1970s and thereafter. Rising trend of malaria was facilitated by developments in various sectors to improve the national economy under successive 5 year plans. Malaria at one time a rural disease, diversified under the pressure of developments into various ecotypes. These ecotypes have been identified as forest malaria, urban malaria, rural malaria, industrial malaria, border malaria and migration malaria; the latter cutting across boundaries of various epidemiological types. Further, malaria in the 1990s has returned with new features not witnessed during the pre-eradication days. These are the vector resistance to

insecticide(s); pronounced exophilic vector behaviour; extensive vector breeding grounds created principally by the water resource development projects, urbanization and industrialization; change in parasite formula in favour of P. falciparum; resistance in P. falciparum to chloroquine and other anti-malarial drugs; and human resistance to chemical control of vectors. Malaria control has become a complex enterprise, and its management requires decentralization and approaches based on local transmission involving multi-sectoral action and community participation.

241. Bhati PG, Malaviya VS, Kant R, Srivastava HC, Sharma SK, **Sharma VP.** Socio-economic aspects of malaria in Kheda district, Gujarat. *Indian J Malariol* 1996 Dec; 33(4):200–8 PMID: 9125834
https://pubmed.ncbi.nlm.nih.gov/9125834/

ABSTRACT

Study on the socio-cultural factors and economic loss due to malaria in rural and urban areas of Kheda district, Gujarat revealed that factors such as education, profession, income, housing pattern, social groups, water storage and treatment seeking behaviour play an important role in malaria transmission. However, the difference of these components in respect to malaria cases between rural and urban areas were statistically insignificant. Mean monetary loss per malaria episode was found to be more in urban area (Rs. 393.59) as compared to rural (Rs. 157.59). The study also suggests the importance of socio-cultural factors in implementing any community health programme. Health education is needed to make the people aware and health conscious for prevention of disease at their own level.

242. Srivastava HC, Sharma SK, Bhatt RM, **Sharma VP**. Studies on Plasmodium vivax relapse pattern in Kheda district, Gujarat. *Indian J Malariol* 1996 Dec;*33*(4):173–9. PMID: 9125831.
https://pubmed.ncbi.nlm.nih.gov/9125831/

ABSTRACT

Relapse pattern in P. vivax malaria was studied in five villages of Nadiad taluka, Kheda district, Gujarat. P. vivax cases treated with 600 mg chloroquine and in combination with 50 mg pyrimethamine (adult dose) yielded 28.31 and 27.73% relapse rate respectively. While relapse rate of 5.78% was observed with five day course of 75 mg primaquine (15 mg/day) administered as radical treatment. Relapse rate in 5-10 yr of age group was comparatively more than other age groups. There was no noticeable difference in relapse rates among male and female. The short-term relapse with a lag period of 2-3 months was significantly higher in this area. The longest relapse with an interval of 17 months was found in one case treated with chloroquine along with pyrimethamine. However, primaquine regimen prevented consecutive relapses. Primaquine has been found adequate to prevent relapse in more than 90% vivax cases, while efficacy of chloroquine-pyrimethamine and chloroquine alone was almost comparable. A high proportion of relapse may be minimized, if 5-days radical treatment is given at appropriate time.

243. **Sharma VP**, Dhiman RC, Ansari MA, Nagpal BN, Srivastava A, Manavalan P, Adiga S, Radhakrishnan K, Chandrasekhar MG. Study on the feasibility of delineating mosquitogenic conditions in and around Delhi using Indian Remote Sensing Satellite data. *Indian J Malariol* 1996 Sep;*33*(3):107–25. PMID: 9014394.
https://pubmed.ncbi.nlm.nih.gov/9014394/

ABSTRACT

A feasibility study to identify mosquitogenic conditions in six study sites in and around Delhi (Bhalaswa lake, Nazafgarh drain, Seelampur lake, Sanjay lake, Okhla barrage and Hindon barrage) using Indian Remote Sensing Satellites was carried out. The water bodies with marshy areas, vegetation and human settlements were considered as environmental variables responsible for mosquitogenic conditions. Multidate IRS 1A and B, LISS-II satellite data were collected and analysed on Vax 11/780 computers. False colour composite (FCC) images were generated and land cover assessed using supervised classification based on ground truth training sets. Ground truth validation of satellite data was done on satellite pass dates. Concurrent monitoring of larval and adult mosquito

density was performed by selecting sub-sites in each study site. The results indicate that mosquitogenic conditions can be identified (with limitation of resolution, i.e. 36.5 m) using FCC images and these images can be used as base maps of study sites. Characterization of study sites based on land cover was done from the view point of mosquitogenic conditions. Spatial changes in mosquito density vis-a-vis changes in environmental variables revealed positive correlation with water bodies and vegetation in some study sites.

244. Wattal S, Adak T, Dhiman RC, **Sharma VP**. The biology and predatory potential of notonectid bug, Enithares indica (Fabr) against mosquito larvae. *Southeast Asian J Trop Med PublicHealth*1996 Sep;*27*(3):633–6. PMID: 9185283. https://pubmed.ncbi.nlm.nih.gov/9185283/

ABSTRACT

The biology of a notonectid bug Enithares indica against immatures of Anopheline, Culicine and Aedine mosquitos was studied in the laboratory. The life cycle of the bug consists of the egg and five nymphal stages and takes about 64 +/- 1.54 days for completion. All stages of E. indica have good predatory potential. It can be used as a biological control agent in an integrated disease vector control program.

1997

245. Raghavendra K, Subbarao SK and **Sharma VP**. An investigation into the recent malaria outbreak of malaria in District Gurgaon, Haryana State. *Curr. Sci 73*(9): 766–770. https://www.researchgate.net/publication/288447670

ABSTRACT

We present results of entomological and parasitological surveys carried out on a recent outbreak of malaria in district Gurgaon, Haryana. An. culicifacies sensu lato the major vector of malaria was found in high densities and was incriminated. The species was resistant to DDT and dieldrin and was susceptible to malathion and deltamethrin in

laboratory tests and these results were in agreement with the observations on their field-efficacy. High incidence of P. falciparum, break down of surveillance, favourable mosquitogenic conditions were some factors responsible for this outbreak. Suggestions for measures to avoid such outbreaks in future are discussed.

246. Subbarao SK, **Sharma VP**. Anopheline species complexes and malaria control. *Indian J Med Res* 1997 Aug;106:164–73. PMID: 9291685
https://pubmed.ncbi.nlm.nih.gov/9291685/

ABSTRACT

Species complexes comprising morphologically indistinguishable biological species that are reproductively isolated, are of common occurrence among anophelines. A list of anopheline species complexes identified so far in the world has been given. To demonstrate the importance of species complexes in malaria control, we report the Anopheles culicifacies complex as a case study. An. culicifacies is a major vector of malaria in India and neighbouring countries. This complex comprises four sibling species, A, B, C and D. Stratification of U.P. state and district Allahabad has been shown taking into consideration the biological differences among sibling species, viz., sibling species composition and vectorial potential- species B is a non-vector while others are vectors. To achieve cost effective vector control, microlevel stratification at least at the block level has been suggested. Implications of differential responses of sibling species to DDT and malathion in field operations have been discussed. To achieve selective and sustainable control, and to reduce the unnecessary selection pressure of insecticides, an insecticide spray strategy to control An. culicifacies has been provided.

247. Dua VK, Sharma SK, Srivastava A, **Sharma VP**. Bioenvironmental control of industrial malaria at Bharat Heavy Electricals Ltd., Hardwar, India--results of a nine-year study (1987-95). *J Am Mosq Control Assoc* 1997 Sep;*13*(3):278–85. PMID: 9383772
https://pubmed.ncbi.nlm.nih.gov/9383772/

ABSTRACT

A bioenvironmental model to control malaria at Bharat Heavy Electricals Ltd. in Hardwar was developed by using existing resources to reduce mosquito breeding. The civil maintenance department carried out major source reduction work by filling pits, low lying areas, ditches, etc., with fly ash from a coal-fired power station, construction of stand posts and proper drainage, mosquito proofing of overhead tanks, and preventive maintenance of the water supply and the sewage system. The project staff has applied 1) expanded polystyrene beads to underground tanks, leaking sluice valve chambers, and blocked sewage manholes; 2) biolarvicides to water accumulated in factory scraps, blocked drains, and riverbed pools, and 3) larvivorous fish to storm water drains, effluent ponds, and drains for the effective control of mosquito breeding. Improved surveillance and treatment coupled with comprehensive developmental schemes were additional tools to gain community support. As a result of intervention measures, the vector density in the township was significantly lowered compared to that of a control area, and there was a drastic reduction in malaria incidence compared to that of the preintervention year: only 190 cases were recorded in 1995, compared to 3,049 cases in 1985. The study has shown that malaria control in an industrial township through an integrated control approach is practical, sustainable, and economically feasible and reduces insecticide pollution in the environment.

248. VK. Dua, Sukesh N.Sinha & **Sharma VP.** Chromatographic Studies On the Isolation Of Peroxydisulphate Oxidation Products Of Primaquine. *J Chromatogr B Biomed Sci Appl* 1998 Apr 24;708(1-2):316–20. PMID: 9653980.
https://doi.org/10.1016/S0378-4347(97)00639-7
https://pubmed.ncbi.nlm.nih.gov/9653980/

ABSTRACT

Eight compounds from peroxydisulphate oxidation of primaquine were fractionated on Bio-Gel P-2 column using water as an eluent. A HPLC method employing acetonitrile–methanol–1 M perchloric acid–water (30:7:1:95, v/v) as a mobile phase at 1.0 ml/min on μBondapak reversed-phase column and UV detection at 254 nm was developed for the

separation and identification of different oxidation products of primaquine. A combination of Bio-Gel chromatography with reversed-phase HPLC was found to be the most suitable analytical technique for the semipreparative isolation of various products formed from the oxidation. Two oxidation products that were isolated had three or four times higher gametocytocidal activity as compared to primaquine.

Keywords: Primaquine

249. Valecha N, Gupta S, Usha D, Biswas S, Sharma A, Adak T, Asthana OP, **Sharma VP**. Efficacy of alpha,beta-arteether in acute uncomplicated P. falciparum malaria. *Int J Clin Pharmacol Res* 1997;*17*(1):11–5 PMID: 9403348. https://pubmed.ncbi.nlm.nih.gov/9403348/

ABSTRACT

A phase-III clinical trial was conducted in 50 patients (42M + 8F) with acute uncomplicated falciparum malaria from Delhi during the period of September to November 1995. Their mean age was 27.2 years, and the mean parasitaemia on day 0 was 0.65%. Patients were hospitalized and treated with a new ethyl derivative of artemisinin developed at CDRI called alpha, beta-arteether, at the dosage of 150 mg l/M for three consecutive days. Peripheral smears were examined every day for 4 days and then weekly up to 28 days. The results of the study showed that the mean parasite and fever clearance times were respectively 19.94 +/- 6.87 and 37.81 +/- 21.67 hours. Within 48 h, 70% of the cases became afebrile and the peripheral smear was negative in 100% of the cases. The drug was well tolerated. Three cases (6%) had recrudescence within 28 days. It is concluded that alpha, beta-arteether is a safe, effective and rapidly acting antimalarial.

250. Yadav RS and Sharma VP. Field evalution of an antigen detection immunochromatoghraphy test for diagnosis of Plasmodium falciparum malaria in India. *Trop.Med*1997;*39*(2):45-49. https://www.researchgate.net/publication/29783825

251. Yadav RS, **Sharma VP**, Upadhyay AK. Field trial of Bacillus sphaericus strain B-101 (serotype H5a, 5b) against filariasis and Japanese encephalitis vectors in India. *J Am Mosq ControlAssoc*1997Jun;*13*(2):158–63. PMID: 9249655 https://pubmed.ncbi.nlm.nih.gov/9249655/

ABSTRACT

A large-scale operational field trial was conducted from June 1993 to October 1994 to evaluate the efficacy of Bacillus sphaericus (strain B-101, serotype H5a,5b) for control of the vectors of filariasis (Culex quinquefasciatus) and Japanese encephalitis (Cx. tritaeniorhynchus and Cx. vishnui) in Rourkela city. Application of B. sphaericus, when sprayed at 1 g/m2 in storm drains, wastewater pools, abandoned masonry tanks, peripheral paddy fields, ditches, and other small water collections and at 4 g/m2 in domestic septic tanks, significantly reduced larval and pupal counts ($P < 0.0001$) and significantly reduced the percentage of habitats containing larvae (3rd-4th instars) ($P < 0.0001$) as compared with routine antilarval measures. This in turn resulted in a reduction in the indoor density of disease vectors in particular and a reduction in mosquito nuisance in general. The trial demonstrated that B. sphaericus has good potential for use against disease vectors and mosquito breeding in polluted as well as clean waters.

252. Das MK, Adak T, **Sharma VP**. Genetic analysis of a larval color mutant, yellow larva, in Anopheles sundaicus. *J Am Mosq Control Assoc* 1997 Jun;*13*(2):203–4. PMID: 9249662. https://pubmed.ncbi.nlm.nih.gov/9249662/

ABSTRACT

One larval body color mutant, yellow larva (yl), was isolated from a newly established cyclic colony of Anopheles sundaicus. The inheritance pattern revealed that yellow larva was an autosomal recessive mutant.

253. Joshi H, Subbarao SK, Adak T,Nanda N, Ghosh SK, Carter R, **Sharma VP**. Genetic structure of Plasmodium vivax isolates in India. *Trans R Soc Trop Med Hyg*

1997 Mar-Apr;*91*(2):231-5. PMID:9196779. DOI:10.1016/s0035-9203(97)90235-2. https://pubmed.ncbi.nlm.nih.gov/9196779/

ABSTRACT

Variations in the allelic composition of glucose phosphate isomerase (GPI), NADP-dependent glutamate dehydrogenase (GDH) and adenosine deaminase (ADA) enzyme systems of Plasmodium vivax were observed in isolates of Indian origin in 1985-1993. No significant difference was observed in allelic frequencies in different years. The data indicated random distribution of GPI, GDH and ADA alleles among the isolates, suggesting that loci for these enzymes were not linked. A high proportion of the isolates comprised at least 2 genetically distinct clones, the mean number of clones per isolate being 1.4. There was no significant difference in the number of oocysts in Anopheles stephensi fed on uniclonal and multiclonal isolates. No difference was observed in the proportions of uniclonal and multiclonal isolates during low and high transmission periods.

254. Yadav , R.S. and **Sharma VP**. Global experiences on insecticide treated mosquito nets and other materials for the protection and control of vector-born diseases. *J Parasite. Dist* 1997;*21*:123–130.

255. Dua VK, Pant CS, **Sharma VP**. HCH and DDT residues in human and bovine milk at Hardwar, India. *Indian J Malariol* 1997 Sep;*34*(3):126–31. PMID:9519568. https://pubmed.ncbi.nlm.nih.gov/

ABSTRACT

Concentrations of HCH and DDT in human and bovine milk were determined in two areas under malaria control namely, BHEL, Hardwar with bioenvironmental control strategy and rural and urban areas of Bahadrabad PHC of Hardwar district with residual spraying of insecticides. Mean HCH and DDT residues in human milk in BHEL were 0.027 and 0.021 mg/kg, while from Bahadrabad were 0.089 and 0.149 mg/kg respectively. Similarly, mean HCH and DDT contents in bovine milk from BHEL were

0.019 and 0.008 mg/kg, while 0.058 and 0.029 mg/kg, respectively from Bahadrabad. Statistically significant differences were recorded in HCH and DDT levels in human and bovine milk samples between BHEL and Bahadrabad areas of Hardwar district. The mean levels of HCH and DDT in bovine milk samples did not exceed the maximum residual limit of 0.05 mg/kg from BHEL whereas, 38.5% samples from Bahadrabad area exceeded this limit.

256. Dua VK, and **Sharma VP.** Industrial malaria control-A bioenvironmental approach. *J. Parasite Dis* 1997; *21*:89–94.

257. Dua VK, Kar PK, Gupta NC, Kar I, **Sharma VP**. In-vivo and in-vitro sensitivity of Plasmodium falciparum to chloroquine in Chennai (Tamil Nadu), India. *Indian J Malariol* 1997 Mar;*34*(1):1–7. PMID: 9291668
https://pubmed.ncbi.nlm.nih.gov/9291668/

ABSTRACT

In-vitro and in-vivo susceptibility of Plasmodium falciparum to chloroquine were conducted at Chennai city, India. Eighteen (60%) out of 30 cases showed resistance in in-vitro study. EC50 of resistant and sensitive cases were 0.40 and 0.24 mumol chloroquine/l blood respectively, while EC90 were 2.64 and 0.84 mumol chloroquine/l blood respectively. In-vivo tests identified 24 cases (40%) as resistant (23 RI and 1 RII) and 36 (60%) as sensitive out of 60 cases. Eight isolates which were found resistant with in-vitro tests showed sensitive behaviour to chloroquine treatment assessed by in-vivo studies.

258. Mittal PK, Dhiman RC, Adak T, **Sharma VP**. Laboratory evaluation of the biocontrol potential of Mesocyclops thermocyclopoides (Copepoda: Cyclopidae) against mosquito larvae. *Southeast Asian J Trop Med Public Health* 1997 Dec;*28*(4):857–61.
PMID: 9656415.
https://pubmed.ncbi.nlm.nih.gov/9656415/

ABSTRACT

Biocontrol potential of Mesocyclops thermocyclopoides against first instar larvae of Anopheles stephensi, Aedes aegypti and Culex quinquefasciatus was studied under laboratory conditions. It was found that M. thermocyclopoides had the highest predation efficacy against Ae. aegypti followed by An. stephensi and Cx. quinquefasciatus. There was a significant reduction in the predation efficacy of M. thermocyclopoides against Cx. quinquefasciatus in the presence of alternate food ($p < 0.01$). The cage simulation trial indicated that M. themocyclopoides has the potential to control Ae. aegypti breeding effectively in a container type of habitat.

259. Singh N, Valecha N, **Sharma VP**. Malaria diagnosis by field workers using an immunochromatographic test. *Trans R Soc Trop Med Hyg* 1997 Jul-Aug;*91*(4):396–7. doi: 10.1016/s0035-9203(97)90254-6. PMID: 9373631.
https://pubmed.ncbi.nlm.nih.gov/9373631/

ABSTRACT

A rapid immunodiagnostic test (ICT Malaria PfTest) has been developed by ICT Diagnostics (Sydney, Australia) for the diagnosis of Plasmodium falciparum infection. The test is an antigen capture assay based on the detection of P. falciparum histidine-rich protein 2 in peripheral blood. This study was undertaken to assess the performance and usefulness of the test as a diagnostic method in highly malarious, inaccessible forested villages of Mandla district, central India. In all, 353 patients with fever were scanned by the test in parallel with thick blood film examination. The sensitivity and specificity were 100% and 84.5%, respectively. The whole test took about 5 min. The test results became negative in most cases (70%) within 7 d after initiation of curative chemotherapy. The test is simple, easy to learn and accurate, and may prove to be an important tool in the battle against falciparum malaria.

260. Yadav RS, **Sharma VP**, Chand SK. Mosquito breeding and resting in treeholes in a forest ecosystem in Orissa. *Indian J Malariol* 1997 Mar;*34*(1):8–16. PMID:9291669.
https://pubmed.ncbi.nlm.nih.gov/9291669/

ABSTRACT

During a longitudinal study in the deciduous monsoon forest in northwest Orissa, 16 species belonging to Genera Anopheles (2), Culex (3), Aedes (8), Armigeres (1), Orthopodomyia (1) and Toxorhynchites (1) were found breeding in the treeholes, while 20 species including disease vectors An. culicifacies, Cx. quinquefasciatus, Ae. albopictus, Cx. tritaeniorhynchus and Cx. vishnui were found resting. The study showed that so far malaria vectors have not exploited the breeding potential of treeholes but Aedes albopictus, vector of dengue/ dengue haemorrhagic fever in Asia, was one of the main species breeding and resting in the treeholes. The paper describes seasonality, interspecific association and some new species breeding/resting in treeholes in Orissa.

261. Singh Neeru,Shukla MM, and Sharma VP. Outbreak of falciparum malaria in submerged villages of Narayanganj PHC, District Mandla due to Narmada Irrigation Project, Central India (Madhya Pradesh). *Curr.Sci* 1997;*73*(8):686–691. https://www.jstor.org/stable/24100435?seq=1

ABSTRACT

On receipt of a report about high prevalence of malaria and deaths in submerged villages of Narayanganj Primary Health Centre (PHC) of district Mandla, Central India (Madhya Pradesh) due to Bargidam in October–November 1996, an investigation into the causes was carried out in 20 villages. Blood smears from fever cases and contacts of deceased patients were collected. Slide positivity rate was over 70%, of which more than 90% was Plasmodium falciparum. Mass blood surveys of infant and pregnant women revealed 39% and 62% parasite prevalence rate respectively. More than 80% children (2–9 yrs) had enlarged spleen. Such high malaria prevalence appeared to be maintained by Anopheles culicifacies and An. fluviatilis which could not be suppressed by intensive surveillance, prompt radical treatment with 1500 mg chloroquine and 45 mg primaquine and two rounds of special focal spray with DDT in October 1996 and January 1997. There is, therefore, an urgent need to develop suitable malaria control strategy by replacement of insecticides in conjunction with prompt and effective radical treatment.

262. **Sharma VP**,Srivastava A. Role of geographic information system in malaria control. *Indian J Med Res* 1997 Aug; *106*:198–204. PMID: 9291687
https://pubmed.ncbi.nlm.nih.gov/

ABSTRACT

In this paper we provide an account of our experience in the application of remote sensing (RS) and geographic information system (GIS) in understanding malaria transmission dynamics at the local level. Two studies have been briefly reviewed. One is the application of RS on the mosquito production in the Sanjay lake and surrounding areas in Delhi. Studies are demonstrated that remote sensing data were useful in assessing relative mosquito abundance from large water bodies. The second study was carried out in Nadiad taluka, Kheda district, Gujarat on the application of RS and GIS in a village-wise analysis of receptivity and vulnerability to malaria. For this study, remote sensed data and topo sheets of 1:50,000 and 1:125,000 were used in preparing thematic maps. Digitised overlaid maps were subjected to computer analysis using ARC/INFO 3.1 software. Malaria annual parasite incidence (API) showed relationship with water table followed by soil type, irrigation and water quality, other parameters also contributed to malaria receptivity but less significantly. Based on GIS analysis location specific malaria control strategy was suggested to achieve cost effective control of malaria on a sustainable basis.

263. Singh N, Singh MP, **Sharma VP**. The use of a dipstick antigen-capture assay for the diagnosis of Plasmodium falciparum infection in a remote forested area of central India. *Am J Trop Med Hyg* 1997 Feb;*56*(2):188–91. PMID:9080879
doi:10.4269/ajtmh.1997.56.188.
https://pubmed.ncbi.nlm.nih.gov/9080879/

ABSTRACT

A study was carried out in a highly malarious forested belt of central India (Madhya Pradesh) to evaluate the usefulness of a dipstick antigen-capture assay (ParaSight F) as a diagnostic method for Plasmodium falciparum appropriate for field use. In all, 1,231

patients with fever were screened in parallel with the taking of thick blood smears. The sensitivity and specificity of the dipstick test for detection of P. falciparum were 93% and 92.5%, respectively. Results also indicate that the dipstick test result became negative within seven days after initiation of curative chemotherapy in the majority of cases (95%). Tribal populations in remote forested areas are important reservoirs of P. falciparum that are mostly resistant to standard antimalarial drugs and a source of malaria to the rest of the country. Control of malaria is limited by inaccessibility, lack of medical services, public ignorance of the disease, and other technical problems. In this population, the dipstick assay was found to be highly accurate, simple, and rapid, suggesting that it may be used in remote forested areas without the need for microscopic examination. The simplicity of the dipstick test enabled administration of more effective and expensive antimalarials preventing further buildup and dissemination of resistant parasites and a return of symptoms.

264. Adak T, Kaur S, Wattal S, Nanda N, **Sharma VP**. Y-chromosome polymorphism in species B and C of Anopheles culicifacies complex. *J Am Mosq Control Assoc* 1997 Dec;*13*(4):379–83. PMID: 9474566
https://pubmed.ncbi.nlm.nih.gov/9474566/

ABSTRACT

Isofemale cultures of wild-caught Anopheles culicifacies collected from 11 localities representing different ecoepidemiological zones on the mainland of India were identified by examining both F1 male larval mitotic karyotypes and polytene chromosomes of half-gravid F1 adult females. All cultures identified as species A by polytene chromosome examination had submetacentric Y chromosomes. In species B and C, some isofemale cultures had acrocentric Y chromosomes, whereas others were submetacentric. The study revealed the existence of a Y chromosome polymorphism in species B and C; consequently, male mitotic karyotypes are of limited use for differentiating members of the An. culicifacies complex.

1998

265. Valecha N, **Sharma VP**, Devi CU. A rapid immunochromatographic test (ICT) for diagnosis of Plasmodium falciparum. *Diagn Microbiol Infect Dis* 1998 Apr; *30*(4):257–60. PMID:9582585. DOI:10.1016/s0732-8893(98)00003-0. https://pubmed.ncbi.nlm.nih.gov/9582585/

ABSTRACT

A field study was conducted to assess the sensitivity and specificity of rapid immunodiagnostic test based on detection of Plasmodium falciparum histidine-rich protein-2 (PfHRP-2) in peripheral blood for diagnosis of P. falciparum infection. Evaluation in 173 patients showed that the assay was 98.59% sensitive and 97.1% specific. There was no cross-reactivity with P. vivax. The test was positive in few patients who were found to be negative by microscopy showing the presence of antigen after curative chemotherapy. The test is a valuable diagnostic tool for falciparum malaria, especially in emergency/field situations requiring rapid diagnosis

266. Biswas, S, N. Valecha and Sharma VP. Assessment of in vivo and in vitro response of Plasmodium falciparum to chlroquine in Indian patients: A diagnostic approach. *J Parasitic Disease*1998;*22*(2):116-120.

267. Raghavendra K, Pillai MKK and **Sharma VP.** Biochemical mechanism of malathion resistant in india Anopheles culicifacies sibling species A,B and C: Microplate Assays and synergistic studies. *Ann Ent Soc Ame 1998 Nov 01*; *91*(6):834–839. https://doi.org/10.1093/aesa/91.6.834

ABSTRACT

Anopheles culicifacies Giles is a complex of 4 sibling species, A, B, C, and D. In view of the differences among sympatric sibling species in the levels of susceptibility to malathion, a study was carried out to determine the resistance mechanism(s). The study was carried out in AndhraPradesh and Gujarat states where species B and C are sympatric

and in Uttar Pradesh and Haryana states where species A and B are sympatric. Microplate biochemical assays on field-collected malathion-resistant species A, B, and C indicated the noninvolvement of elevated levels of nonspecific esterases and insensitive acetylcholinesterase. Bioassays with the synergist triphenyl phosphate (a specific carboxylesterase inhibitor) have indicated the involvement of carboxylesterase as the major mechanism of malathion resistance in these species.

268. Dua VK. and **Sharma VP.** Chromatographic studies of peroxydisulphate oxidation products of primaquine. *J Chromatographic* 1998 Apr 24;*708*:316–320. https://doi.org/10.1016/S0378-4347(97)00639-7

ABSTRACT

Eight compounds from peroxydisulphate oxidation of primaquine were fractionated on Bio-Gel P-2 column using water as an eluent. A HPLC method employing acetonitrile–methanol–1 M perchloric acid–water (30:7:1:95, v/v) as a mobile phase at 1.0 ml/min on μBondapak reversed-phase column and UV detection at 254 nm was developed for the separation and identification of different oxidation products of primaquine. A combination of Bio-Gel chromatography with reversed-phase HPLC was found to be the most suitable analytical technique for the semipreparative isolation of various products formed from the oxidation. Two oxidation products that were isolated had three or four times higher gametocytocidal activity as compared to primaquine.

Keywords: Primaquine

269. Singh N, Shukla MM and **Sharma VP**. Effectiveness of alpha, Beeta-Arteether in Clearing Plasmodium falciparum parasitemia in Central India. *Southeast Asian J Trop Med Pub Hlth* 1998 June;*29*:225–227. PMID: 9886102. https://pubmed.ncbi.nlm.nih.gov/9886102/

ABSTRACT

Forty-six patients (25 Females + 21 Males) of uncomplicated Plasmodium falciparum in districts Jabalpur and Mandla of central India (Madhya Pradesh) were administered

alpha-beta arteether (an ethyl derivative of qinghaosu), intramuscularly for 3 consecutive days (150 mg once a day). The results revealed that there was rapid control of fever in all the patients without administration of any antipyretic drug. The mean parasite clearance time was 30.78 +/- 10.92 hours and recrudescence/reinfection rate was 6.7% within 28 days. Study indicates that arteether, besides being a potent and fast acting schizontocidal drug, also exhibited gametocytocidal action on P. falciparum.

270. Batra CP, Mittal PK, Adak T, **Sharma VP**. Efficacy of neem oil-water emulsion against mosquitoimmature. *Indian J Malariol* 1998 Mar;*35*(1):15–21. PMID:10319557 https://pubmed.ncbi.nlm.nih.gov/10319557/

ABSTRACT

Neem oil-water emulsion was used in mosquito breeding habitats to find out its larvicidal effect on immatures of different mosquito species. Application of 5% neem oil-water emulsion @ 50 ml/sq m in pools and @ 100 ml/sq m in tanks resulted in 100% reduction of III and IV instar larvae of An. stephensi after 24 h while, against Cx. quinquefasciatus it was 51.6 and 91.2% reduction in the larval density after Day 1 and 14 respectively. Similarly, application of 10% emulsion in desert coolers against Aedes aegypti @ 40 to 80 ml per cooler resulted in complete inhibition of pupal production.

271. TR Sampath, RS Yadav, **VP Sharma**, and T Adak**.** Evaluation of lambdacyhalothrin impregnated bednets in a malaria endemic area of India Part 1: Implementation and acceptability of the trial. *J Am Mosq Contr Assoc* 1998 Dec;*14*(4): 431–436. PMID: 10084138
https://pubmed.ncbi.nlm.nih.gov/10084137/

ABSTRACT

In malaria endemic villages of the Indian State of Orissa, the impact of bednets treated with lambdacyhalothrin at 25 mg/m2 on malaria vectors was assessed during a 3-year intervention trial beginning in May 1990. The main malaria vector was Anopheles culicifacies with a small contribution from Anopheles fluviatilis. The impregnated

bednets caused a significant reduction in vector density as assessed by morning indoor resting catches, man-biting rate, light trapping, the proportion of females engorged with human blood, and the parity rate as compared with villages with untreated or no nets. No statistically significant difference was observed in these parameters between the villages with untreated nets or no nets. The trial demonstrated that the lambdacyhalothrin-treated nets were highly effective against the malaria vectors.

272. TR Sampath, RS Yadav, **VP Sharma**, and T Adak. Evaluation of lambdacyhalothrin impregnated bednets in a malaria endemic area of India Part 2: Impact on malaria vectors. *J Am Mosq Contr Assoc* 1998 Dec;*14*(4):437–443. PMID:10084138.
https://pubmed.ncbi.nlm.nih.gov/10084138/

ABSTRACT

In malaria endemic villages of the Indian State of Orissa, the impact of bednets treated with lambdacyhalothrin at 25 mg/m2 on malaria vectors was assessed during a 3-year intervention trial beginning in May 1990. The main malaria vector was Anopheles culicifacies with a small contribution from Anopheles fluviatilis. The impregnated bednets caused a significant reduction in vector density as assessed by morning indoor resting catches, man-biting rate, light trapping, the proportion of females engorged with human blood, and the parity rate as compared with villages with untreated or no nets. No statistically significant difference was observed in these parameters between the villages with untreated nets or no nets. The trial demonstrated that the lambdacyhalothrin-treated nets were highly effective against the malaria vectors.

273. RS Yadav , TR Sampath**, VP Sharma**, T Adak and SK Ghosh. Evaluation of Lambdacyhalothrin impregnated bednet in a malaria endemic area of India,Part 3: Effects on malaria incidence and clinical measures. *J Am Mosq Contr Assoc* 1998 Dec;*14*(4): 444–450. PMID:10084139
https://pubmed.ncbi.nlm.nih.gov/10084139/

ABSTRACT

In Indian villages with high malaria endemicity use of nylon bednets treated at 25 mg/m2 at 6-month intervals for 3 years caused significant reductions in malaria incidence, slide positivity rate, slide falciparum rate, annual parasite index, and parasite rate in the entire population, as well as reductions in rates of splenomegaly and anemia in children. In villages with untreated nets, considerable reduction also occurred in these parameters except for the rate of splenomegaly. In the village without nets, a relatively small drop occurred in the parasite rate and anemia but no change occurred in malaria incidence, and an increase occurred in the rate of splenomegaly. The trial thus showed the efficacy of impregnated bednets against malaria in the forested hills of Orissa State where the existing control strategy based on indoor residual spraying of DDT has remained incapable of interrupting malaria transmission.

274. Kumar A, **Sharma VP,** Sumodan PK, Thavaselvam D. Field trials of biolarvicide Bacillus thuringiensis var. israelensis strain 164 and the larvivorous fish Aplocheilus blocki against Anopheles stephensi for malaria control in Goa, India. *J Am Mosq Control Assoc* 1998 Dec;*14*(4):457–62. PMID: 10084141.
https://pubmed.ncbi.nlm.nih.gov/10084141/

ABSTRACT

Severe outbreaks of malaria occurred in the coastal villages of the Candolim Primary Health Centre (PHC) of Goa, India, in 1993 and 1994. These outbreaks were associated with accelerated construction activity with an influx of migrant laborers. The weekly application of Bacillus thuringiensis var. israelensis (B.t.i.) strain 164 at 1 g/m2 and introduction of the indigenous larvivorous fish Aplocheilus blocki in major breeding habitats of Anopheles stephensi replaced ongoing DDT spraying and pyrethrum fogging in June 1994. The objective of this study was to evaluate the effects of B.t.i. and larvivorous fish on An. stephensi and subsequent transmission of malaria in the Candolim PHC, Goa, India. In 1995 the populations of an. stephensi in larger habitats (habitats with immatures: t = 5.19, P = 0.0017; immature density: t = 3.57, P = 0.007) and smaller habitats (habitats with immature: t = 3.86, P = 0.005; immature density: t = 4.93, P =

0.002) and malaria incidence declined substantially (malaria cases: chi 2 = 712, P < 0.001; slide positivity rate: chi 2 = 10.36, P < 0.001; annual parasite index; chi 2 = 15.1, P < 0.001), whereas the incidence of malaria continued to increase in other nearby towns.

275. Dua VK, Pant CS, **Sharma VP**, Pathak GK. HCH and DDT in surface extractable skin lipid as a measure of human exposure in India. *Bull Environ Contam Toxicol* 1998 Feb;*60* (2):238–44. doi: 10.1007/s001289900616. PMID: 9470984. https://pubmed.ncbi.nlm.nih.gov/9470984/

276. Singh N, Singh MP and **Sharma VP**. Knowledge, attitude, beliefs and practices study related to malaria and intervention Strategies In ethnic tribals of Mandla (Madhya Pradesh). *Curr. Sci* 1998 Dec;*75* (12):1386–1390**.** https://www.jstor.org/stable/24101028?seq=1

ABSTRACT

In India, malaria control programmes among tribal belts failed to make any dent as the perceptions of the tribals regarding control and treatment of malaria and Government strategies are at variance. Therefore, a knowledge, attitude, belief and practices (KABP) study was undertaken among 'gond' ethnic tribals of Mandla district to assess their knowledge related to malaria transmission and its control. Surveys revealed that the tribals call this 'fever with shivering and rigour' as Attrala and they did not appreciate the presentation of malaria control programmes in the first place. About 98% tribals believed malaria was transmitted by drinking or bathing in contaminated water. First line of treatment is through 'guniyas' the village traditional healers, failing which injections were given by unlicensed practitioners (quacks) in the market place. Primary Health Care system is their last resort. Tribals did have knowledge about mosquito breeding in stagnant water (43%) yet all efforts were made to store rain water around their houses and in agricultural fields. Further, they did not understand the relevance of DDT spray for control of mosquito/malaria. Therefore, there is an urgent need to build up information, education and communication (IEC) programmes for greater acceptance of the malaria control programme.

277. Mittal PK and **Sharma VP.** Laboratory evaluation of the biocontrol potential of against mosquito larvae. *Southeast Asian J Trop Med Pub Hlth* 1997 Dec;*28*: 857–861. PMID: 9656415.
https://pubmed.ncbi.nlm.nih.gov/9656415/

ABSTRACT

Biocontrol potential of Mesocyclops thermocyclopoides against first instar larvae of Anopheles stephensi, Aedes aegypti and Culex quinquefasciatus was studied under laboratory conditions. It was found that M. thermocyclopoides had the highest predation efficacy against Ae. aegypti followed by An. stephensi and Cx. quinquefasciatus. There was a significant reduction in the predation efficacy of M. thermocyclopoides against Cx. quinquefasciatus in the presence of alternate food ($p < 0.01$). The cage simulation trial indicated that M. themocyclopoides has the potential to control Ae. aegypti breeding effectively in a container type of habitat.

278. Haq S, Kant R, Sharma SK, **Sharma VP**.Mosquito breeding associated with urban sewage system in Anand City (Gujarat). *Indian J Malariol* 1998 Mar;*35*(1):31–4. PMID: 10319559.
https://pubmed.ncbi.nlm.nih.gov/10319559/

279. Das MK, Nagpal BN, **Sharma VP**. Mosquito fauna and breeding habitats of anophelines in Car Nicobar Island, India. *Indian J Malariol* 1998 Dec;*35*(4):197–205. PMID: 10748560.
https://pubmed.ncbi.nlm.nih.gov/10748560/

ABSTRACT

A total of 31 species of mosquitoes belonging to 10 genera, i.e. Anopheles, Aedes, Armigeres, Culex, Harpagomyia, Hodgesia, Mansonia, Orthopodomyia, Toxorhynchites and Uranotaenia were collected from Car Nicobar Island. Four Anopheles species, An. barbumbrosus, An. insulaeflorum, An. kochi and An. roperi were recorded for the first time from this Island. An. sundaicus was the most predominant species encountered. The

results of the study on anophelines with emphasis on species-specific breeding preference in various aquatic habitats have been recorded.

280. Dua VK, Kumari R, Johri RK, Ojha VP, Shukla RP, **Sharma VP**. Organochlorine insecticide residues in water from five lakes of Nainital (U. P.), India. *Bull Environ Contam Toxicol* 1998 Feb;*60*(2):209–15. PMID:9470980.
doi: 10.1007/s001289900612.
https://pubmed.ncbi.nlm.nih.gov/9470980/

281. Ansari MA, Kapoor N, **Sharma VP**. Relative efficacy of synthetic pyrethroid-impregnated fabrics against mosquitoes under laboratory conditions. *J Am Mosq Control Assoc* 1998 Dec;*14*(4):406–9. PMID: 10084134.
https://pubmed.ncbi.nlm.nih.gov/10084134/

ABSTRACT

The efficacy of synthetic pyrethroid-impregnated fabrics was evaluated against Anopheles stephensi, Aedes aegypti, and Culex quinquefasciatus, under laboratory conditions. Results revealed that delta-methrin was significantly superior in comparison to lambdacyhalothrin and cyfluthrin. Results of bioassay tests revealed that deltamethrin was 1.5 and 1.9 times more effective than lambdacyhalothrin and cyfluthrin, respectively, against An. stephensi exposed to cotton fabric treated at 100 g/m2. Deltamethrin was 3.9 and 4.6 times more effective against Ae. aegypti and 3.53 and 4.0 times more effective against Cx. quinquefasciatus. Of cotton, nylon, polyethylene, and jute fabrics, the cotton was the best on the basis of median lethal dose (LD50) and 95% lethal dose (LD90) values and persistence of insecticide.

282. **Sharma VP**, A Srivastava. Role of geographic information system in malaria control. *Indian J Med Res* 1997 Aug;*106*:198–204. PMID:9291687.
https://pubmed.ncbi.nlm.nih.gov/9291687/

ABSTRACT

In this paper we provide an account of our experience in the application of remote sensing (RS) and geographic information system (GIS) in understanding malaria transmission dynamics at the local level. Two studies have been briefly reviewed. One is the application of RS on the mosquito production in the Sanjay lake and surrounding areas in Delhi. Studies are demonstrated that remote sensing data were useful in assessing relative mosquito abundance from large water bodies. The second study was carried out in Nadiad taluka, Kheda district, Gujarat on the application of RS and GIS in a village-wise analysis of receptivity and vulnerability to malaria. For this study, remote sensed data and topo sheets of 1:50,000 and 1:125,000 were used in preparing thematic maps. Digitised overlaid maps were subjected to computer analysis using ARC/INFO 3.1 software. Malaria annual parasite incidence (API) showed relationship with water table followed by soil type, irrigation and water quality, other parameters also contributed to malaria receptivity but less significantly. Based on GIS analysis location specific malaria control strategy was suggested to achieve cost effective control of malaria on a sustainable basis.

283. Kant R, Pandey SD, Sharma SK, **Sharma VP**. Species diversity and interspecific associations among mosquitoes in rice agro-ecosystem of Kheda district, Gujarat. *Indian J Malariol* 1998 Mar;*35*(1):22–30. PMID:10319558.
https://pubmed.ncbi.nlm.nih.gov/10319558/

ABSTRACT

Rice agro-ecosystem of Kheda district in Central Gujarat was inhabited by 14 species of anophelines and 15 species of culicines. Anopheles subpictus and Culex vishnui gr dominated the respective groups. Species diversity in rice fields as well as in associated habitats remained high during non-monsoon (rabi) period. There existed several positive and negative interspecific associations. Malaria vector An. culicifacies showed positive association with An. subpictus, An. annularis, An. pallidus and Cx. quinquefasciatus but was found negatively associated with An. nigerrimus, Cx. vishnui and Cx. tritaeniorhynchus.

284. Singh N, Saxena Ajay and **Sharma VP**. Status of Chloroquine efficacy against Plasmodium falciparum in pregnant women in Tribal area of central india. *Curr. Sci* 2001March 10;*80* (5):618–620.
https://www.researchgate.net/publication/242764588

285. Singh N and **Sharma VP**. Studies on malaria during pregnancy in a tribal area of central India. *Southeast Asian J Trop Med Pub Hlth* 1998 March;*29*:10–17 PMID:9740260
https://pubmed.ncbi.nlm.nih.gov/9740260/

ABSTRACT

In tribal villages of central India where malaria is highly prevalent (mesoendemic), this preliminary study was undertaken to determine the effects of malaria infection in a group of 456 pregnant women with or without fever. Only 96 women were found infected with malaria, of which Plasmodium falciparum accounted for 64% of the detected parasites, while P. vivax for the remaining 36%. There were no instances of cerebral malaria or death however, one abortion and four still births were recorded among 38 primigravid women. Only one neonate was found infected with P. falciparum on day 21 though parasitemia was not high. Anemia was commonly present in most of the women (80%). Failure to clear P. falciparum parasitemia after a chloroquine regimen (25 mg/kg of body weight) was commonly observed. Persistent P. falciparum parasitemia was recorded in 8% cases. Poor response to chloroquine suggests the need to change the drug policy.

286. Adak T, **Sharma VP**, Orlov VS. Studies on the Plasmodium vivax relapse pattern in Delhi, India. *Am J Trop Med Hyg* 1998 Jul; *59*(1):175-9 PMID:9684649 DOI: 10.4269/ajtmh.1998.59.175
https://pubmed.ncbi.nlm.nih.gov/9684649/

ABSTRACT

A five-year epidemiologic study of patients attending a malaria clinic in Delhi was conducted to find the relapse rate of infections with Plasmodium vivax, its seasonal

correlation between the primary infection and subsequent relapses, the duration of the incubation period, and the patterns of relapse. By our definition, the relapse rate ranged from 23% to 44% depending on the duration of follow-up. The relapse pattern observed in the study clearly suggests the existence of both tropical and temperate zone types of P. vivax in the population characterized by distinct incubation periods and the possible existence of P. vivax subpopulations characterized by primary long incubation periods. The implication of different incubating forms of P. vivax on the epidemiology and control of malaria is also discussed.

287. Dua VK, Sarin R, Gupta NC and **Sharma VP**. Sulfalene concentrations in plasma and blood cells of Plasmodium falciparum malaria Cases after treatment with metakelfin using high performance liquid chromatography. *J Chromatogr B Biomed Sci Appl* 1998 Sep 4;714(2):390–4. https://doi.org/10.1016/S0378-4347(98)00222-9. https://pubmed.ncbi.nlm.nih.gov/9766882/

ABSTRACT

A reversed-phase high-performance liquid chromatographic method using acetonitrile–methanol–1 M perchloric acid–water (25:9:0.8:95, v/v/v) at a flow-rate of 1.0 ml min^{-1} on LiChrospher 100 RP 18 column (250×4 mm; 5 μm) with UV (254 nm) detection has been developed for the determination of sulfalene in plasma and blood cells after oral administration of the antimalarial drug metakelfin. Calibration curves were linear in the range 0.5–100 μg ml^{-1}. The limit of quantification was 50 ng ml^{-1}. Within-day and day-to-day coefficients of variation averaged 3.84 and 5.31%, respectively. Mean extraction recoveries of sulfalene from plasma and blood cells were 87.21 and 84.65%, respectively. Mean concentrations of sulfalene in plasma of P. falciparum cases on days 2, 7 and 15 were 44.58, 14.90 and 1.70 μg ml^{-1}, respectively; in blood cells concentrations of sulfalene were 7.77, 3.25 and 0.75 μg ml^{-1}, respectively, after oral treatment with two tablets (1000 mg) of metakelfin. Significant difference was recorded on day 2 for sulfalene concentration in blood cells of healthy and P. falciparum cases ($t=9.49$; $P<0.001$).

Keywords: Sulfalene, Metakelfin

288. Kar I, Eapen A, Adak T, **Sharma VP**. Trial with ParaSight-F in the detection of Plasmodium falciparum infection in Chennai (Tamil Nadu), India. *Indian J Malariol* 1998 Sep;*35*(3):160–2. PMID:10497842.
https://pubmed.ncbi.nlm.nih.gov/10497842/

ABSTRACT

Efficacy of Plasmodium falciparum histidine-rich protein (HRP-II) based diagnostic test ParaSight-F, was evaluated for diagnosis of P. falciparum malaria at the Malaria Clinic in Malaria Research Centre (Field Station), Chennai, Tamil Nadu. A total of 93 febrile patients were screened in parallel by microscopy and by ParaSight-F. The sensitivity and specificity of the test were 100% for the detection of P. falciparum infection.

289. Mittal PK, Adak T, **Sharma VP**. Variations in the response to Bacillus sphaericus toxins in different strains of Anopheles stephensi Liston. *Indian J Malariol* 1998 Dec;*35*(4):178–84. PMID:10748558
https://pubmed.ncbi.nlm.nih.gov/10748558/

ABSTRACT

Bacillus sphaericus has a potential of use as a larvicide in water storage practices but no such study has been done against Anopheles stephensi. Baseline susceptibility status of eleven wild and three mutant strains of An. stephensi to Spherix, a formulation of B. sphaericus, strain B-101 (serotype H5a, 5b) was determined to find the variations in the degree of their response to B. sphaericus toxins and to study the possibility of development of resistance. The LC50 and LC90 values of different strains of An. stephensi to B. sphaericus formulation varied from 0.088 to 1.42 mg/l and 0.314 to 10.98 mg/l, respectively. Among all the strains tested, Sarojini Nagar, Delhi strain of An. stephensi (a wild type strain) was least susceptible. Laboratory selection of Sarojini Nagar strain of An. stephensi with B. sphaericus at a concentration of 4 mg/l resulted in the development of a high degree of resistance (LC50 > 1600 mg/l) to B. sphaericus within four generations.

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290. Dua VK, Kar PK and Sharma VP. Applications of mosquito fish Gambusia for reducing DDT contamination in Water, Sediment and edible fish from rural pond of india. *Poll Res* 1999;*18* (1):89–94

291. Kumar, A. and **Sharma VP**. Anopheles stephensi build-up and accelerated malaria transmission in the post bio-control intervention phase in Candolim PHC of Goa, India. *J Parasit Dis* 1999;*23* (1):41–44.

292. Dua VK, Gupta NC, **Sharma VP**. Chloroquine concentrations profile in the community of Mewat region, District Gurgaon, India. *Southeast Asian J Trop Med Public Health* 1999 Jun; 30(2):232–4. PMID:10774683**.**
https://pubmed.ncbi.nlm.nih.gov/10774683/

ABSTRACT

A survey was conducted to find chloroquine concentration profile in the community of Mewat region district Gurgaon (Haryana) of India. 88 P. falciparum and 3 P. vivax cases were detected out of 148 blood slides examined with a SPR of 61.48. Plasma chloroquine and desethylchloroquine concentrations were determined in 55 P. falciparum and 2 P. vivax patients and 29 persons whose blood slides were negative for malaria parasite before giving any treatment. Mean chloroquine concentrations in cases with P. falciparum parasites and without malaria parasites were 0.018 and 0.016 microg ml(-1) respectively. Chloroquine to desethyl chloroquine ratio was between 2 and 3 in both groups. Only 10 malaria parasite negative cases out of 29 had plasma chloroquine concentrations above 0.016 microg ml(-1) required for malaria chemoprophylaxis. Chloroquine was undetectable in plasma samples of 8 out of 55 P. falciparum cases. Chloroquine plasma concentrations in 21 P. falciparum cases were below therapeutically effective concentration of 0.016 microg ml(-1) suggesting improper treatment while in 29 P. falciparum cases, parasitemia recurred despite required chloroquine concentration

confirming chloroquine resistant status. Irregular prophylaxis and lack of proper treatment was one of the major causes of malaria outbreak in this area.

293. **Sharma VP .** Current scenario of malaria in India. *Parassitologia* 1999 Sep;*41*(1-3):349–53. PMID: 10697882**.**
https://pubmed.ncbi.nlm.nih.gov/10697882/

ABSTRACT

The Indian National Malaria Eradication Programme (NMEP) is reporting 2.5 to 3 million malaria cases, and about 1,000 malaria deaths annually. Malaria in the northeastern states is stable and in the peninsular India unstable. There are six major and three minor malaria vectors, of which Anopheles culicifacies transmits malaria in rural areas and An. stephensi in the towns. Other vectors are of local importance. Plasmodium vivax is the dominant infection and accounts for 60-65% cases whereas P. falciparum contributes 30-35% cases. Field operations to control malaria are impeded by resistance and/or exophilic vector behavior, parasite resistance to antimalarial drugs, operational problems in spraying, failure to search breeding of mosquitoes at weekly intervals, staff shortages and financial constraints. Resurgent malaria invaded new ecotypes created by green revolution, industrial growth and urban development resulting in paradigm shift towards man-made malaria. NMEP has launched a world bank-assisted enhanced malaria control project with primary emphasis to protect 62.2 million high risk population in 7 states.

294. Dua VK, Kar PK, Gupta NC, **Sharma VP**. Determination of chloroquine and desethylchloroquine in plasma and blood cells of Plasmodium vivax malaria cases using liquid chromatography. *J Pharm Biomed Anal* 1999 Oct;*21*(1):199–205. PMID: 10701928 doi: 10.1016/s0731-7085(99)00097-7.
https://pubmed.ncbi.nlm.nih.gov/10701928/

ABSTRACT

Chloroquine and de-ethylchloroquine were extracted from plasma and blood cells by addition of 80 µl internal standard [2.5 µg/ml of 4-(4-dimethylamino-1-methylbutylamino)-7-chloroquinoline], 1 ml 1M-NaOH and 6 ml diethyl ether with shaking for 15 min. After centrifugation at 1000 g for 10 min, the ether layer was evaporated under N2 and the residue was dissolved in mobile phase. HPLC was performed on a 5 µm µPorasil column (30 cm × 3.9 mm i.d.) with dichloromethane/methanol/1M-perchloric acid (100:9:1.2) as mobile phase (1 ml/min) and UV detection at 343 nm or fluorimetric detection at 380 nm (excitation at 340 nm). Calibration graphs were linear from 0.025-1 µg/ml and the detection limit was 5-10 ng. Within-day and day-to-day RSD (n=5) in plasma for chloroquine were 2.3-2.76% and 2.83-3.36% for de-ethylchloroquine. Recoveries were 89.7-91.05%

Keywords: Normal Phase Chromatography; Chloroquine; Desethylchloroquine; Plasmodium Vivax; Malaria Cases.

295. Singh N, Shukla MM, **Sharma VP**. Epidemiology of malaria in pregnancy in central India. *Bull World Health Organ*1999;*77*(7):567–72. PMID: 10444880. https://pubmed.ncbi.nlm.nih.gov/10444880/

ABSTRACT

Analysis of three years of data from a malaria clinic operated by the Indian Council of Medical Research (ICMR) in the Government Medical College Hospital in Jabalpur, central India, showed a high malaria prevalence among pregnant women, which was statistically highly significant ($P < 0.0001$) compared with the situation among nonpregnant women. Cerebral malaria was a common complication of severe Plasmodium falciparum infection, with a high mortality during pregnancy, requiring immediate attention. The study also showed that malaria infection was more frequent in primigravidae, falling progressively with increasing parity. Mean parasite densities were significantly higher in pregnant women compared with nonpregnant women for both P. falciparum ($P < 0.001$; $df = 137$) and P. vivax ($P < 0.05$; $df = 72$) infection. Pregnant women with falciparum or vivax malaria were significantly more anaemic than

noninfected pregnant women or infected nonpregnant women. The average weight of 155 neonates from infected mothers was 350 g less than that of 175 neonates from noninfected mothers. This difference in birth weight was statistically significant for both P. falciparum ($P < 0.0001$; df = 278) and P. vivax ($P < 0.0001$; df = 223) infection. Congenital malaria was not recorded. We conclude that pregnant women from this geographical area require systematic intervention owing to their high susceptibility to malaria during pregnancy and the puerperium.**PIP:** A 3-year study on malarial epidemiology was conducted among 2127 pregnant women from 12 weeks' gestation up to 40 days after delivery at the Obstetrics and Gynecology Department of Government Medical College in Central India. The women either had fever or a history of fever, belonged to the lower socioeconomic groups, and worked in their homes and in the fields. Personal and reproductive histories as well as antimalarial drug intake during pregnancy were considered. Comparisons in rates of anemia and low birth weight were investigated between the two groups, which were composed, respectively, of nonpregnant women of reproductive age assessed for the prevalence of vivax/falciparum malaria and parasite density (the control group) and pregnant women from the study group who had fever, but no malarial infection. Blood smears from all neonates whose mothers were enrolled in the study were also prepared. Results showed statistically higher malaria prevalence in primigravidae, decreasing progressively with increasing parity. 33 pregnant women were infected with P. vivax, while 67% were infected with P. falciparum; 17 of these were cerebral malaria cases. Women with falciparum or vivax malaria were significantly more anemic than noninfected pregnant women or infected nonpregnant women. The average weight of 155 neonates from infected mothers was 350 g less than that of 174 neonates from noninfected mothers. These findings suggest that the high susceptibility of pregnant women to malaria requires systemic intervention.

296. I Kar , SK Subbarao, A Eapen, J Ravindran, T S Satyanarayana, K Raghavendra, N Nanda, **VP Sharma.** Evidence for a new malaria vectors species, species E, within the Anopheles culicifacies complex. *J Med Entomo* 1999 Sept;*36* (5):595–600 PMID: 10534953. doi: 10.1093/jmedent/36.5.595
https://pubmed.ncbi.nlm.nih.gov/10534953/

ABSTRACT

Female Anopheles culicifacies Giles from Ramanathapuram district, Tamil Nadu state, India, were examined for oocysts and sporozoites and their larval progeny for mitotic karyotype. Collections were made from Mandapam and Uchipuli on the mainland, and Thangachimadam and Pamban on Rameshwaram Island. Of the 451 An. culicifacies females that were collected and dissected, 24 were found positive for Plasmodia (21 for sporozoites and 3 for oocysts). Both acrocentric and submetacentric Y-chromosome karyotypes were observed among the progeny of females from all villages. All 11 iso-female lines whose parental females were positive for sporozoites or oocysts had progeny with submetacentric Y-chromosomes. Total absence of sporozoite-positives among mothers of acrocentric males was evidence of assortative mating between these 2 sympatric populations (i.e., 2 species). We propose that the nonvector population with acrocentric Y-chromosome sons retain the original designation of species B and that the vector population with the submetacentric Y-chromosome sons be designated as species E, a new species.

297. Adak T, Suman Wattal and **Sharma VP**. Genetics of creamish white an eye colour mutrant in Anopheles stephensi. *Journal of Heredity* Sept 1999;*90* (5):573–574. https://doi.org/10.1093/jhered/90.5.573\

ABSTRACT

Genetic analysis of a new eye color mutant, creamish white (cw), has been described in Anopheles stephensi, a major vector of malaria in the Indo-Pakistan subcontinent. Inheritance pattern revealed that it is sex linked and recessive to wild eye color. Creamish white eye was found to be nonallelic and epistalic to another recessive, sex-linked mutant, red eye (r). The map distance between cw and r was estimated as 41.80 ± 0.99.

298. Srivastava A, Nagpal BN, Saxena R, **Sharma VP**. Geographic information system as a tool to study malaria receptivity in Nadiad Taluka, Kheda district, Gujarat,

India. *Southeast Asian J Trop Med Public Health* 1999 Dec;*30*(4):650–6. PMID:10928355 https://pubmed.ncbi.nlm.nih.gov/10928355/

ABSTRACT

Nadiad taluka, Kheda district, Gujarat State, India, comprising of 100 villages with unstable malaria and periodic epidemics, was selected for the study. Using topo sheets and satellite imageries thematic maps on water table, water quality, hydro-geomorphology, soil type, relief, irrigation channels, were prepared, overlaid and integrated sequentially using Arclnfo software. The composite map resulted in 13 stratification classes. Stratification classes 1-12 fell in non-irrigated tracts and exhibited 95% matching of areas of high receptivity as revealed by geographical information systems (GIS) and annual malaria parasite incidence (API). Stratification class 13, an irrigated area, showed poor matching but the ground verification established low receptivity of the area. Thus the study resulted in complete reconciliation of cause and effect relationship as established as per GIS in explaining malaria epidemiology. In general, the study revealed that high malaria in villages of Nadiad is mainly due to high water table, soil type, irrigation and water quality. Based on local malaria transmission determinants, a revised malaria control strategy has been suggested.

299. Singh N, Mehra RK, **Sharma VP**. Malarai and the Narmada river development in India : a case study of the Bargi dam. *Ann Trop Med Parasitol* 1999 Jul; *93*(5):477–88 PMID: 10690243. doi:10.1080/00034989958212.
https://pubmed.ncbi.nlm.nih.gov/10690243/

ABSTRACT

The largest river-valley development to be proposed in India is that in the Narmada valley. The building of the Bargi dam, a multi-purpose irrigation and hydro-electric project, in Jabalpur, in central India, formed part of the first phase of the development of this valley (1974-1988). Many villages and several hectares of land in three districts were submerged as the waters rose behind the dam, the worst affected area being the catchment area of the primary health centre (PHC) at Narayanganj, in Mandla district.

Until recently, cases of malaria were relatively rare in Narayanganj. However, an epidemic of malaria in late 1996 claimed hundreds of lives in the area and the outbreak spread, during 1997, to new villages in the region. A review of the records collected by the National Malaria Eradication Programme (NMEP) not only indicated that the slide positivity rate (SPR) for Narayanganj increased > 7.45-fold between 1979 and 1997 but also that the slide falciparum rate (SFR) increased > 32-fold over the same period. The NMEP data available for Mandla district as a whole indicated a doubling in mean SPR and SFR between 1979 and 1997. There is no evidence that a new species of vector has established since 1979. In fact, indoor-resting densities of anophelines and of the most established vector, Anopheles culicifacies, have fallen since the dam was built, but densities of another vector, An. fluviatilis, have increased.

300. Batra CP, Mittal PK, Adak T, **Sharma VP**. Malaria investigation in District Jodhpur, Rajasthan, during the summer season. *Indian J Malariol* 1999 Sep-Dec;*36*(3-4):75–80. PMID:11398666.
https://pubmed.ncbi.nlm.nih.gov/11398666/

ABSTRACT

Studies were carried out in District Jodhpur of the Thar region of Rajasthan. Epidemiological investigation revealed high slide positivity rate in the canal irrigated area (54.5 per cent), sand dunes area (67.54 per cent), stone quarry area (26.66 per cent) and in the desert plain area (41.5 per cent). Similarly, slide falciparum rates were 7.10, 4.38, 6.66 and 5.6 per cent respectively. Entomological studies showed An. stephensi and An. culicifacies as major species and their densities ranged between 2 to 14.58 and 0 to 0.9 pmh respectively. Resistance in malaria vectors to insecticides, poor surveillance and suppressive treatment of cases appear to be the factors for persistent transmission in the study area.

301. Atrie B, Subbarao SK, Pillain MKK, Rao SRV, **Sharma VP**. Population cytogenetic evidence for sibling species within the taxon anopheles annularis Vander wulp. *Ann Entomol Soc Am* 1999 Mar 01;92(2):243–249 doi:10.1093/aesa/92.2.243. https://europepmc.org/article/agr/ind22010296

ABSTRACT

Anopheles annularis van der Wulp populations from 6 districts in India were cytologically examined. An ovarian nurse cell polytene chromosome map for 5 arms is presented. Nine inversions-- w,i(1), j(1), and k(1) on chromosome arm 2; j(1) and z in arm 3; h(1) and s(1) on arm 4; and k on arm 5-- were polymorphic in these populations. In districts Shahjahanpur and Ghaziabad populations, for j(1) inversion on arm 2, there were no heterozygotes. This was taken as evidence for reproductive isolation between 2 populations. The 2 were provisionally designated as species A and B, characterized respectively by +j(1) and j(1) arrangements in chromosome arm 2. The other 4 populations were identified as species A.

302. Singh N, Mishra AK, Chand SK, **Sharma VP**. Population dynamics of Anopheles culicifacies and malaria in the tribal area of central India. *J Am Mosq Control Assoc* 1999 Sep;*15*(3):283-90 PMID:10480116. https://pubmed.ncbi.nlm.nih.gov/10480116/

ABSTRACT

A longitudinal study (1993-94) on malaria was conducted in Dungaria, a typical forest fringe tribal village in Mandla district of central India (Madhya Pradesh). Our initial objective was to obtain in-depth baseline data on malaria transmission in the tribal village to elucidate the factors responsible for persistent malaria in the area and thereby to help in formulating an improved malaria control program. Anopheles culicifacies Giles was the predominant vector of malaria, although Anopheles fluviatilis James were recorded in small numbers. The transmission season was from May to November. Analysis of the malaria cases revealed hyperendemic malaria, with Plasmodium falciparum the predominant species. The prevalence of Plasmodium vivax was mainly in the summer

and that of P. falciparum in autumn. The study suggested that a number of factors were responsible for the continuation of malaria transmission in the village.

2000

303. **(A).** Ashwani Kumar, Sangodkar UMX, **Sharma VP.** Advances in the bio-control of mosquito vectors utilizing Bacillus sphaericus and B. thuringiensis var. Israelensis. Proceedings of National Academy of Sciences India Section B-Biological Sciences 2000; 65: 1–20. http://irgu.unigoa.ac.in/drs/handle/unigoa/1126.

303. Dua VK, Gupta NC, Kar PK, Nand J, Edwards G, **Sharma VP,** Subbarao SK. Chloroquine and desethylchloroquine concentrations in blood cells and plasma from Indian patients infected with sensitive or resistant Plasmodium falciparum. *Ann Trop Med Parasitol* 2000 Sep;*94*(6):565–70. PMID:11064758. doi:10.1080/00034983.2000.11813579.
https://pubmed.ncbi.nlm.nih.gov/11064758/

ABSTRACT

The sensitivities of 61 Indian cases of Plasmodium falciparum malaria to chloroquine (CQ) were investigated using in-vitro and in-vivo methods. Concentrations of CQ and desethylchloroquine (DCQ) in blood cells and plasma from CQ-sensitive and -resistant cases were determined 2 and 7 days after initiation of treatment, by HPLC. On day 2, the mean CQ concentrations in the samples collected from the sensitive cases were higher than those in the samples from the resistant patients, in plasma (0.47 v. 0.32 microgram/ml; $P < 0.02$) and particularly in the blood cells (1.51 v. 0.46 micrograms/ml; $P < 0.001$). By day 7, however, the CQ concentrations in the two groups were similar. Although, on day 2, the mean ratio of the CQ to DCQ concentrations was significantly higher in the blood cells from the sensitive group than in those from the resistant cases ($P < 0.01$), the CQ/DCQ ratios for the plasma were similar for the two groups. Similarly, the mean ratio between the blood-cell concentration of CQ on day 2 and the concurrent plasma concentration (BPr) was also relatively high in the sensitive group ($P < 0.001$).

304. **Sharma VP**, Kumar A. Clinical trials of an indigenous diagnostic kit Paracheck-F for the diagnosis of Plasmodium falciparum malaria in Goa**.** *J Parasit Dis* 2000 Jan;24(1):43–45. https://www.researchgate.net/publication/243218971

ABSTRACT

A new indigenous kit, Paracheck-F, for the diagnosis of P. falciparum malaria was tested in a clinical trail conducted during 1999 in Goa, India. The trial was done among 50 construction workers in two P. falciparum foci in Goa. The test efficacy, sensitivity and specificity were very high being 96, 95.8 and 96.15% respectively. The positive and negative predictive values were 95.8 and 96.15%, respectively. The kit will prove useful in the routine diagnosis of P. falciparum malaria especially inaccessible hard core areas with predominance of this species.

305. Valecha N, Devi CU, Joshi H, Shahi VK, **Sharma VP** and Shiv Lal. Comparative efficacy of Ayush-64 vs Chloroquine in vivax malaria. *Curr Sci* 2000 May 10;*8*(9):1120–1122.

ABSTRACT

A phase II prospective comparative randomized clinical trial was conducted in patients of vivax malaria to compare the efficacy of Ayush-64 vs chloroquine. Ayush-64, a herbal formulation patented by Council of Ayurveda and Siddha was compared with chloroquine. Patients received an oral dose of either 1 g Ayush-64, three times a day for 5–7 days or a total dose of 1500 mg chloroquine over 3 days. Peripheral smears were examined everyday for 3 days or till they werenegative and then weekly up to 28 days. The results of the study showed that at day 28, only 23 of 47 (48.9%) patients in the Ayush group and all the 41 in the chloroquine group were cured ($p < 0.05$). Even in these 23 patients in the Ayush group parasite clearance time was longer than chloroquine (3.16 vs 1.5 days). Both regimens were generally well tolerated. In conclusion, Ayush-64 in a dose of 1 g three times a day for 5–7 days is not as effective for treatment of vivax malaria, as standard chloroquine therapy.

306. Subbarao SK, Kumar KV, Nanda N, Nagpal BN, Dev V, **Sharma VP**. Cytotaxonomic evidence for the presence of Anopheles nivipes in India. *J Am Mosq Control Assoc* 2000 Jun;*16*(2):71–4. PMID: 10901629.
https://pubmed.ncbi.nlm.nih.gov/10901629/

ABSTRACT

Anopheles philippinensis mosquitoes were collected from 5 states in India: Assam, Meghalaya, Arunachal Pradesh, Manipur, and Nagaland. Half-gravid females were examined for variations in wing venation using the presector dark mark on vein I and polytene chromosomes derived from ovarian nurse cells. Polytene chromosomes were examined for diagnostic inversions, t on chromosome arm 2 and I on arm 5. Based on wing characteristics, both An. philippinensis and An. nivipes were identified. Polytene chromosome examinations revealed that all specimens from these 2 populations had 2t; 51 inversion genotype, a diagnostic character for An. nivipes. The wing character was not diagnostic; therefore, it was concluded that all the specimens examined were actually An. nivipes and not An. philippinensis. Further, the X chromosome was of x+b type, that is, the standard arrangement with reference to the inversion b, reported in the An. nivipes population in Thailand. This is the 1st report that unequivocally establishes the occurrence of An. nivipes in India and also shows that the adult wing character is not reliable in distinguishing An. philippinensis from An. nivipes, as has been observed in Thailand.

307. Sharma VP, Neena Valecha and Burk ET. Evaluation of a rapid immunochromatographic test for detection of Plasmodium falciparum Malaria in Karnataka, India. *Journal Parasite* 2000;*86* (6):1345–1348.

308. Dua VK, Nanda N, Gupta NC, Kar PK, Subbarao SK**, Sharma VP.** Investigation ofmalaria prevalence at National Thermal Power Corporation, Shaktinagar, Sonbhadra District (Uttar Pradesh), India. *Southeast Asian J Trop Med Public Health* 2000 Dec;31(4):818–24. PMID: 11414434.
https://pubmed.ncbi.nlm.nih.gov/11414434/

ABSTRACT

Malaria in industrial complexes is promoted by extensive mosquitogenic potential generated by excavations and importation of parasite through migratory labor. The National Thermal Power Corporation (NTPC), Shaktinagar, Sonbhadra district was surveyed for malariogenic conditions from 1994 to 1996. The major mosquito breeding sites were drains, storm-water drains, lakes, outside tanks, overhead tanks, sluice-valve chambers, ornamental tanks, wells, pit wells and water reservoirs, etc. Anopheles culicifacies was the major vector of malaria in this area. Sibling species identification of An. culicifacies revealed that species C predominated during the transmission season and responsible to transmit malaria. Insecticide susceptibility tests against An. culicifacies sl showed that An.culicifacies population was 100% susceptible to malathion, fenitrothorn and deltamethrin while it was found 44% resistant to DDT. The malaria cases recorded in 1994, 1995 and 1996 were 847, 590 and 409 respectively. In vitro study on P. falciparum cases showed that 41, 70, 50% of the isolates tested were resistant to chloroquine in 1994, 1995 and 1996 respectively while an in vivo follow-up study showed 20-30% P. falciparum cases resistant to chloroquine. An integrated approach involving alternate vector control measures along with judicious use of insecticides has been suggested to bring down malaria in industrial complexes.

309. Singh N and Sharma VP. Malaria Control Madhya Pradesh, India. *Pub. Health* 2000;*15*:57-68.

310. Singh N, Mishra SS, Singh MP, **Sharma VP**. Seasonality of Plasmodium vivax and P. falciparum in tribal villages in central India (1987-1995). *Ann Trop Med Parasitol* 2000 Mar;94(2):101-12 PMID:10827865 doi:10.1080/00034980057446 https://pubmed.ncbi.nlm.nih.gov/10827865/

ABSTRACT

Microscopical examination of blood films produced from samples collected, over a 9-year period (1987-1995), from the inhabitants of four tribal villages of Mandla district, Madhya Pradesh (central India) revealed that malaria was highly endemic and probably

transmitted perennially. Both Plasmodium vivax and P. falciparum were prevalent in all age-groups but their prevalence was highly seasonal: longitudinal studies showed an autumn (October-November) peak for P. falciparum and a summer (April-May) peak for P. vivax. However, both the incidence and prevalence of infection with each Plasmodium species showed inter-village variations. Analysis of the malariometric parameters investigated revealed that there had been no improvement in the malaria situation over the study period, and that, since 1992, there had been a shift in the predominant parasite, from P. vivax to P. falciparum, in each village.

311. Nanda N, Yadav RS, Subbarao SK, Joshi H, **Sharma VP**. Studies on Anopheles fluviatilis and Anopheles culicifacies sibling species in relation to malaria in forested hilly and deforested riverine ecosystems in northern Orissa, India. *J Am Mosq Control Assoc* 2000 Sep;*16*(3):199–205. PMID:11081646.
https://pubmed.ncbi.nlm.nih.gov/11081646/

ABSTRACT

In a malaria-endemic region in northwestern Orissa, India, a longitudinal study was undertaken to delineate information on the sibling species of Anopheles fluviatilis and Anopheles culicifacies and their bionomics and role in malaria transmission in forested and deforested ecosystems. In forested villages, An. fluviatilis sibling species S (97.97%) and T (2.02%) were present. The former was highly anthropophagic (human blood index 0.88). Among the sibling species of An. culicifacies, species B (27.96%), C (71.1%), and B/C heterozygotes (0.94%) were present and were highly zoophagic. In deforested riverine villages An. fluviatilis was nearly absent and An. culicifacies sibling species A (0.48%), B (21.1%), C (77.94%), and B/C heterozygotes (0.48%) were present. In forested villages, the annual parasite incidence (269 cases/1,000) and the slide positivity rate (45%) were significantly higher than those in deforested areas, which had values of 39 cases/1,000 and 27%, respectively. The study showed that the high endemicity of malaria in the forested villages was due primarily to 2 vectors, the high rate of anthropophagy of An. fluviatilis species S, and also the more favorable ecological conditions for this vector.

2001

312. OP Asthana, JS Srivastava, VP Kamboj, N Valecha, **VP Sharma**, S Gupta, TK Pande, KA Vishwanathan, KM Mahapatra, NC Nayak, PK Mahapatra, J Mahanta, VK Srivastava, Vasdev, N Singh, MM Shukla, AB Balsara, SK Mishra, SK Satpathy, SMohanty, B Dash. A multicentric study with arteether in patients of uncomplicated falciparum malaria. *J Assoc Physicians India* 2001 Jul;*49*:692–6. PMID:11573553. https://pubmed.ncbi.nlm.nih.gov/11573553/

ABSTRACT

Two hundred and sixty seven patients of uncomplicated P. falciparum malaria completed study in a multicentric phase III clinical trial of Arteether. Arteether was given intramuscularly in a dose of 150 mg daily for three consecutive days. Each patient was followed upto 28 days ofalpha, beta arteether therapy. The cure rate was 97% with fever clearance time between 1-7 days (24-168 hours) and parasite clearance time between 1-3 days (24-72 hours). Parasite reappearance rate was found to be 3% and reported at only three of the centres. Following the treatment no adverse effect was observed on haematological, biochemical and vital clinical parameters.

313. Valecha N, Adak T, Asthana OP, Srivastava AP, and **Sharma VP**. Comparative antirelapse efficacy of CDRI compound 80/53 vs. primaquine in double Blind clinical trail. *Curr Sci* 2001 Feb 25;*80*(4):561–563**.** https://www.jstor.org/stable/24104246?seq=1

ABSTRACT

One-year follow-up of malaria patients was undertaken to monitor the antirelapse efficacy of CDRI compound 80/53 (Bulaquine). A total of 697 patients of Plasmodium vivax malaria were included in three arm double blind randomized study comparing CDRI 80/53 with placebo and primaquine. Drugs were given once a day for 5 days and the dose for CDRI 80/53 and primaquine was 25 mg and 15 mg, respectively. Thirty-four patients were lost to followup and 663 patients completed one year trial. Two hundred and fourteen patients came back with second episode during the one-year followup

period. A detailed analysis revealed that the relapse rate during non-transmission period with placebo in 16 (10.6%) patients was higher than both in primaquine (3.0%) and CDRI 80/53 (4.9%) groups.

314. Yadav RS, Sampath RR, **Sharma VP**. Deltamethrin treated bednets for control of malaria transmitted by Anopheles Culicifacie in india. *J Med Entomol* 2001 Sep;*38* (5):613–622. PMID:11580032 doi:10.1603/0022-2585-38.5.613. https://pubmed.ncbi.nlm.nih.gov/11580032/

ABSTRACT

In amalaria endemic area in Orissa state in eastern India baseline (November 1989 to October 1990) malaria incidence ranged front 215 to 328 cases/1,000 population/yr in different groups of villages. In November 1990, nylon bednets treated with deltamethrin at 25 mg/m2 were given out in two villages (population 1062), untreated bednets were given out in five villages (population 1,226) and in one village (population 786) nets were not given. Nets were retreated in October 1991 and June 1992 in treated-net villages. The trial continued until October 1992. The treated nets caused significant reduction in indoor resting density, biting (landing), light trap catches, human engorgement rate, and parous rate of malaria vector Anopheles culicifacies Giles as compared with untreated nets or no nets. Untreated nets also caused reductions in biting and indoor density. Treated nets retained insecticidal action well over 6 mo. In the final year, malaria incidence was reduced 8.9% in the no-net village, 34.9% in the villages with untreated nets, and 59.1% in villages with treated nets. The relative risk of malaria and parasite rates declined significantly in villages with treated nets. Pediatric splenomegaly rate did not change in the no-net village, increased significantly in villages with untreated nets, but decreased significantly in those with treated nets. Treated nets also reduced pediatric anemia rates, but Hb concentration increased in all villages. Considering the benefits of treated bednets and development of resistance among vectors to DDT and malathion, bednets treated with deltamethrin could be an effective alternative strategy to control malaria in forested areas in India.

315. Shukla RP, Sharma SN, Kohli VK, Nanda N, **Sharma VP**, Subbarao SK. Dynamics of malaria transmission under changing ecological scenario in and around Nanak Matta Dam, Uttaranchal, India. *Indian J Malariol* 2001 Sep-Dec;*38*(3-4):91–8. PMID: 12125521.
https://pubmed.ncbi.nlm.nih.gov/12125521/

ABSTRACT

To understand the transmission dynamics of malaria in three different ecotypes, namely watershed (forest), seepage (Nanak Matta Dam) and plain (non-forest, non-dam) areas of Nainital and Udham Singh Nagar districts of Uttaranchal, entomological and parasitological investigations were carried out from July 1996 to June 1997. In the three ecotypes, average per man hour densities of adult vector species in human dwellings and cattlesheds recorded were high for Anopheles culicifacies from April to September and October to March for An. fluviatilis. Prevalence of both An. culicifacies and An. fluviatilis was higher in the forest area as compared to other two areas. Observations on gonotrophic condition revealed endophilic tendency of both vector species. Higher number of both vector species were found in outdoor than indoor during night human bait collections. Out of 864 specimens of An. fluviatilis dissected, one showed natural infection of sporozoites in salivary glands in the month of November from the forest area only. Sibling species study of An. fluviatilis revealed the presence of species S for the first time in the forest area. Parasitological investigations also depicted high incidence of malaria in the forest area as compared to other two areas. Overall results from the study indicated active malaria transmission in the forest area.

316. Batra CP, Adak T, **Sharma VP**, Mittal PK. Impact of urbanization on bionomics of An. culicifacies and An. stephensi in Delhi. *Indian J Malariol* 2001 Sep-Dec;*38*(3-4):61–75. PMID:12125518.
https://pubmed.ncbi.nlm.nih.gov/12125518/

ABSTRACT

Study on bionomics of malaria vectors was carried out in riverine and non-riverine areas, on account of tremendous ecological changes in the topography of Delhi. The densities of

adult anophelines were estimated by two techniques, hand catch and total catch index. Percentage of An. stephensi (15.68) collected by both the techniques was more than An. culicifacies (3.16) in both the areas. Day-time resting preferences of vector species in human dwellings and cattlesheds did not differ significantly. Preferred larval habitats of An. culicifacies in riverine area shifted to large lakes, channels and ponds. In malaria transmission, An. culicifacies played a role only in the northern part of the riverine area where water pollution was at minimal level, while An. stephensi played an equal role in the malaria transmission in both the areas. High sporozoite rates were found in type form of An. stephensi in localities where its proportion was high, thus confirming its active role in malaria transmission. The overall sporozoite rate of vectors was 0.7 per cent and P. falciparum sporozoite infections of the vectors were detected in An. stephensi only. P. vivax and P. falciparum infections were found in the ratio of 68:32. The non-riverine area was more malarious than the riverine area.

317. Adak T, Valecha N, **Sharma VP**. Plasmodium vivax polymorphism in a clinical drug trial. *Clin Diagn Lab Immunol* 2001 Sep;*8*(5):891-4. doi:10.1128/CDLI.8.5.891-894.2001. PMID: 11527798.
https://pubmed.ncbi.nlm.nih.gov/11527798/

ABSTRACT

Data from a double-blind randomized clinical drug trial were analyzed to find the comparative responses of two antirelapse drugs, bulaquine and primaquine, against different relapsing forms of Plasmodium vivax infection. A 1-year follow-up study strongly suggests that the duration of preerythrocytic development of P. vivax is a polymorphic characteristic, exhibited by two strains of hypnozoites responsible for early and late manifestations after primary infection. Short-term relapses were significantly higher in the first half year than long-term relapses, and the reverse was true in the second half year. Clinical drug response data showed that the hypnozoites characterized for short-term relapse were not susceptible to either of the antirelapse drugs in the currently administered dose, whereas hypnozoites characterized for long incubation were significantly susceptible.

318. Dua VK, **Sharma VP**. Plasmodium vivax relapses after 5 days of primaquine treatment, in some industrial complexes of India. *Ann Trop Med Parasitol* 2001 Oct;*95*(7):655–9. doi:10.1080/00034980120103225. PMID: 11784418.
https://pubmed.ncbi.nlm.nih.gov/11784418/

ABSTRACT

In an investigation of relapse patterns, 5541 cases of Plasmodium vivax malaria, from four major industrial complexes, each received at least one, 5-day course of primaquine (at 15 mg/day). Any subject relapsing was retreated with the same course. Overall, 511 (9.2%) of the P. vivax cases relapsed after the first course and 99 (1.78%), 25 (0.45) and three (0.05%) cases relapsed two, three and four times, respectively. Most cases of relapse occurred within 1 year of treatment. Clearly, a 5-day primaquine regimen is inadequate to control relapses among P. vivax cases and there is therefore an urgent need to review the treatment strategy. It may now be appropriate to implement the 14-day regimen recommended by the World Health Organization, although this is much less feasible under field conditions.

319. Dua VK, Kumari R, **Sharma VP**, Subbarao SK. Organochlorine residues in human blood from Nainital, India. *Bull Environ Contam Toxicol* 2001 Jul;*67*(1):42–45. PMID:11381310 doi:10.1007/s001280088
https://pubmed.ncbi.nlm.nih.gov/11381310/

320. Dua VK, Kumari R, **Sharma VP**. Organochlorine residue sequestration by Anopheles culicifacies sensu lato mosquito larvae. *Bull Environ Contam Toxicol* 2001 Apr;*66*(4):492–6. PMID:11443312 doi:10.1007/s001280033.
https://pubmed.ncbi.nlm.nih.gov/11443312/

321. Dua VK, Kumari R, **Sharma VP**. Sequestraion of organochlorine residues by Anopheline culicifacies mosquito larvae from water. *Bull Environ Contam Toxicol*;*66*(4):492–496. doi:10.1007/s001280033
http://www.springerlink.com/content/d7350t98175621

ABSTRACT

Anopheles culicifacies sensu lato is the major vector of rural and peri-urban malaria in India (Pattanayak et al. 1994). Residual insecticides such as HCH and DDT have been the mainstay of malaria control to interrupt transmission (Anon 1991). Due to persistent nature of organochlorine insecticides in nature and extensive use for malaria control, A. culicifacies became resistant to these insecticides (Pattanayak et al. 1994). Very high bioamplification of DDT by invertebrates (Johnson et al. 1971) and mosquito larvae (Metcalf et al. 1971) from water have been reported earlier which may cause resistance to DDT and HCH at the larval stages due to uptake of these residues from contaminated water. We report sequestration of HCH and DDT residues by A. culicifacies larvae from contaminated water of different breeding habitats.

322. SN Tiwari, SK Ghosh, TS Sathyanarayan, TRR Sampath, AK Kulshrestha, **VP Sharma**, K Ravi Kumar and MV Murugendrappa. Species-specific anopheline breeding habitats with reference to bioenvironmental Control of malaria on Arsikere taluk, Hussan district, Karnataka. *Entomon* 2001;26(2):131-39.

2002

323. Joshi H, Subbarao SK, Valecha N, **Sharma VP**. Ahaptoglobinemia (HpO) and malaria in India. *Indian J Malariol* 2002 Mar-Jun;*39*(1-2):1–12. PMID:14686104. https://pubmed.ncbi.nlm.nih.gov/14686104/

ABSTRACT

Haptoglobin (Hp) polymorphism analysed among P. vivax and P. falciparum patients and malaria negative subjects from areas with different epidemiological situations had shown high incidence of ahaptoglobinemia (HpO) among malaria patients. A definite association of HpO with P. vivax as well as P. falciparum malaria in Indian subjects had been observed. However, low sensitivity and reliability of HpO index indicates that it can not be a good indicator for determination of malaria endemicity. About 75 per cent of

HpO subjects with P. vivax infection when treated with chloroquine showed typable Hp polymorphs by 8-9 days of post-treatment.

324. Dua VK , Sinha SN, Biswas S, Valecha N, Puri SK, **Sharma VP**. Isolation and antimalarial activity of peroxydisulfate oxidation products of primaquine. *Bioorg Med Chem Lett* 2002 Dec 16;*12*(24):3–587-9. PMID:12443782. doi:10.1016/s0960-894x(02)00802-8.
https://pubmed.ncbi.nlm.nih.gov/12443782/

ABSTRACT

Five compounds formed by peroxydisulfate oxidation of primaquine were isolated using chromatographic methods and evaluated for antimalarial activity in vitro. One compound 6-methoxy-5,8 bis(4'-amino-1'-methylbutylamino)quinoline [P(1)] was found to have good gametocytocidal activity against Plasmodium yoelli infected mice at 10mg kg(-1) dose in vivo.

325. Singh N, **Sharma VP**. Patterns of rainfall and malaria in Madhya Pradesh, central India. *Ann Trop Med Parasitol* 2002 Jun;*96*(4):349-59. PMID:12171616 doi:10.1179/000349802125001113.
https://pubmed.ncbi.nlm.nih.gov/12171616/

ABSTRACT

Some recent outbreaks of Plasmodium falciparum malaria have been attributed, at least in part, to increases in the intensity and duration of rainfall caused by the El Niño southern oscillation (ENSO), a periodic climatic phenomenon. Since it takes time for unusually heavy rainfall to translate into unusually high densities of the vector mosquitoes, it has been suggested that data on recent rainfall might be used to predict climate-related epidemics of malaria. This possibility was explored by comparing the patterns in the incidence of malaria in (1) Dungaria, a highly malarious village in the central-Indian district of Mandla, and (2) Mandla district as a whole, for the periods 1986-2000 and 1967-2000, respectively, with data on rainfall for the same areas and periods.

Unfortunately, no clear relationship was observed between rainfall and malaria incidence, although a major development project to improve water resources in the study area (which resulted in local villages being partially or completely submerged in water) may have masked any significant association. A useful method for predicting which years are going to be high- or low-risk years for malaria epidemics, in the present and other epidemiological settings, remains a future goal.

326. Singh N, Saxena A, **Sharma VP**. Usefulness of an inexpensive, Paracheck test in detecting asymptomatic infectious reservoir of plasmodium falciparum during dry season in an inaccessible terrain in central India. *J Infect* 2002 Oct; 45(3):165-8. PMID:12387772 doi:10.1016/s0163-4453(02)91055-8.
https://pubmed.ncbi.nlm.nih.gov/12387772/

ABSTRACT

Objectives: The performance of a new indigenous rapid diagnostic test, Paracheck Pf was evaluated in detection of Plasmodium falciparum in asymptomatic children in remote forest villages of Mandla district, central India to determine the lower limits of sensitivity and specificity of rapid test. Methods: A finger prick blood sample was collected to prepare blood smear and for testing with the Paracheck test. The blood smears were read by an experienced technician blinded to the Paracheck results. The figures for specificity, sensitivity, accuracy and predictive values were calculated using microscopy as gold standard. Results: The new diagnostic test had a sensitivity of 94% and a specificity of 89%. The positive and negative predictive values were 71% and 98%, respectively. The J -index was 0.83%.Conclusion: The rapid test was found to be very easy to perform and the result could be read reliably by field workers. The field evaluation with this new inexpensive test, ($0.65/test) indicates that it could be used as an epidemiological tool in the management of malaria particularly in areas where microscopy is not operationally feasible to attain the goal of the roll back malaria initiative.

2003

327. Dua VK , Dev V, Phookan S, Gupta NC, **Sharma VP**, Subbarao SK. Multi-drug resistant Plasmodium falciparum malaria in Assam, India: timing of recurrence and anti-malarial drug concentrations in whole blood. *Am J Trop Med Hyg* 2003 Nov;*69*(5):555-7. PMID: 14695096.
https://pubmed.ncbi.nlm.nih.gov/14695096/

ABSTRACT

The susceptibility of 23 cases of Plasmodium falciparum malaria from the Sonapur primary health center in the Kamrup district of Assam, India to different antimalarials was investigated using the 28-day World Health Organization in vivo test. Whole blood concentrations of chloroquine, sulfadoxine, and quinine were determined at different intervals and at the time of parasites recrudescence after completion of treatment with the respective drugs to confirm the status of drug sensitivity. A case of multi-drug resistant P. falciparum malaria was found where recrudescence occurred, despite standard oral treatment with chloroquine, sulfadoxine/pyrimethamine, and quinine sequentially. Whole blood concentrations of chloroquine, sulfadoxine, and quinine at the time of recrudescence were 0.35 microg/ml (day 7), 18 microg/ml (day 14), and 0.009 microg/ml (day 14), respectively. Therefore, monitoring of drug-resistant P. falciparum malaria and its proper treatment should be intensified to check the spread of multi-drug resistant strains in other parts of the country.

328. Yadav RS, Bhatt RM, Kohli VK, **Sharma VP**. The burden of malaria in Ahmedabad city, India: a retrospective analysis of reported cases and deaths. *Ann Trop Med Parasitol* 2003 Dec;*97*(8):793–802. PMID:14754491.
doi:10.1179/000349803225002642.
https://pubmed.ncbi.nlm.nih.gov/14754491/

ABSTRACT

Owing to the paucity of accurate information on the burden of malaria in urban India, a retrospective, epidemiological study was carried out in Ahmedabad city, which has a population of about 3 million. Surveillance data for the years 1965-1998 showed a gradual resurgence of malaria between 1967 to 1976, followed by waves of low and high incidences. Plasmodium vivax always predominated but the proportion of cases attributed to P. falciparum increased markedly from 1983. When the surveillance data and health records of the major public and private health facilities in the city were analysed, for the period between 1991 and 1998, P. vivax was found to account for 69% of all malaria cases and P. falciparum for the other 31%. The incidence of infection with each Plasmodium species showed seasonal variation, with that of P. vivax increasing from January to September but then declining as the incidence of P. falciparum increased. The age-specific differences seen in incidence were not statistically significant (P=0.7). The annual numbers of malaria-attributable deaths were strongly correlated with the incidence of P. falciparum (r=0.88). The malaria incidence detected (37431 cases, representing a mean annual incidence of 12.2 cases/1000) was nine times greater than that officially reported (4119 cases, or 1.3 cases/1000 each year). Similarly, the annual malaria-attributable mortality detected (22 deaths/million) was far higher than that officially notified (0.3 death/million). The results of the retrospective analysis not only provide a more accurate, baseline estimate of the burden of malaria in an urban area of India but also clearly indicate the need for a much more efficient health-information system, for recording and managing malaria in such a setting.

2004

329. Dua VK ,Ojha VP, Roy R, Joshi BC, Valecha N, Devi CU, Bhatnagar MC, **Sharma VP,** Subbarao SK. Anti-malarial activity of some xanthones isolated from the roots of Andrographis paniculata. *J Ethnopharmacol* 2004 Dec;*95*(2-3):247–51. PMID:15507344 doi:10.1016/j.jep.2004.07.008.
https://pubmed.ncbi.nlm.nih.gov/15507344/

ABSTRACT

Four xanthones were isolated from the roots of Andrographis paniculata using a combination of column and thin-layer chromatographic methods. They were characterized as (i) 1,8-di-hydroxy-3,7-dimethoxy-xanthone, (ii) 4,8-dihydroxy-2,7-dimethoxy-xanthone, (iii) 1,2-dihydroxy-6,8-dimethoxy-xanthone and (iv) 3,7,8-trimethoxy-1-hydroxy xanthone by IR, MS and NMR spectroscopic methods. In vitro study revealed that compound 1,2-dihydroxy-6,8-dimethoxy-xanthone possessed substantial anti-plasmodial activity against Plasmodium falciparum with its IC(50) value of 4 microg ml(-1). Xanthones bearing hydroxyl group at 2 position demonstrated most potent activity while xanthones with hydroxyl group at 1,4 or 8 position possessed very low activity. In vivo anti-malarial sensitivity test of this compound on Swiss Albino mice with Plasmodium berghei infection using Peters' 4-day test gave substantial reduction (62%) in parasitaemia after treating the mice with 30 mg kg(-1) dose. In vitro cytotoxicity against mammalian cells revealed that 1,2-dihydroxy-6,8-dimethoxy-xanthone is non-cytotoxic with its IC(50) > 32 microg ml(-1).

330. Merlin Willcox, Philippe Rasoanaivo, **Sharma VP**, Gerard Bodeker. Comment on: Randomized controlled trial of a traditional preparation of Artemisia annua L. (Annual Wormwood) in the treatment of malaria. *Trans R Soc Trop Med Hyg* 2004 Dec;*98*(12):755-6. PMID:15485708. doi:10.1016/j.trstmh.2004.06.001. https://pubmed.ncbi.nlm.nih.gov/15485708/

331. Ghosh SK, Tiwari SN, Sathyanarayan TS, Sampath TRR, **Sharma VP**, Nanda N, Joshi H, Adak T, Subbarao S K. Larvivorous fish in wells target the malaria vector sibling species of the Anopheles culicifacies complex in villages in Karnataka, India. *Trans R Soc Trop Med Hyg* 2005 Feb;*99*(2):101–5. PMID:15607336 dio:10.1016/j.trstmh.2004.03.009. https://pubmed.ncbi.nlm.nih.gov/15607336/

ABSTRACT

Malaria was a major problem in a sericulture area of Karnataka, south India, where Anopheles culicifacies s.l. and A. fluviatilis s.l. were considered to be the main vectors. Sibling species complexes of these two species were analysed in three ecologically different villages. Among A. culicifacies, only sibling species A and B were found. In Puram, a village with 22 wells, species A predominated; species B predominated in a village with four wells and a stream, and in a village with a stream and no wells. Poecilia reticulata fish were introduced into all wells and streams in the villages, and after one year no vectors were found in Puram, and all, or nearly all, A. culicifacies were species B in the other two villages. All A. fluviatilis belonged to the sibling species T. Blood meal analysis indicated that a few of the A. culicifacies collected had fed on humans while all the A. fluviatilis had fed on bovines. Before the introduction of fish, the annual parasite incidence for malaria was high in Puram, but much lower in the other two villages. From 1998 (over one year after release of fish) until 2003, no malaria cases were detected in the three villages.

332. Dev V, Phookan S, **Sharma VP**, Anand SP. Physiographic and entomologic risk factors of malaria in Assam, India. *Am J Trop Med Hyg* 2004 Oct;*71*(4):451–6. PMID:15516642.
https://pubmed.ncbi.nlm.nih.gov/15516642/

ABSTRACT

Fever surveys were conducted in several districts of the Indian state of Assam to ascertain the prevalence of malaria in relation to vector abundance, entomologic inoculation rates (EIRs), and geographic location of human settlements. Anopheles minimus were incriminated, but their relative abundance and biting rates varied among districts, and no significant correlation was observed between these two indicators (r = 0.43, P = 0.34). Plasmodium falciparum was the predominant parasite species except in two districts where P. vivax was the majority parasite. The EIRs per person/night were 0.46-0.71 in P. falciparum-predominant areas and 0.12 in the district where P. vivax predominated. The correlation of percentage of fever cases positive for malaria infection in each district with

the corresponding EIR was not significant (r = 0.6, P = 0.21). Malaria cases were detected in all months of the year but peaked during May-June, which corresponded to the months of heavy rainfall. These were also the months with highest incidence of infection with P. falciparum. Malaria cases were observed in all age groups of both sexes, and there was clustering of cases in villages near the vector-breeding habitat (perennial seepage streams), and foothill villages. However, malaria incidences were consistently lower in villages within 5 km of the nearest health care facility, which were in town areas. The data presented are indicative of low-to-moderate levels of malaria transmission by An. minimus, and would be of value for developing future intervention strategies.

2006

333. Pedro Melillo de Magalhães, J Plaizier-Vercammen, **VP Sharma**. Artemisia annua as a herbal tea for malaria. *Afr J Tradit Complement Altern Med* 2006 Aug 28;*4*(1):121–3. PMID: 20162081
https://pubmed.ncbi.nlm.nih.gov/20162081/

334. Adak T, Singh OP, Nanda N, **Sharma VP**, Subbarao SK. Isolation of a Plasmodium vivax refractory Anopheles culicifacies strain from India. *Trop Med Int Healt* 2006 Feb;*11*(2):197–203. doi:10.1111/j.1365-3156.2005.01556.x. PMID:16451344
https://pubmed.ncbi.nlm.nih.gov/16451344/

ABSTRACT

Anopheles culicifaciessensu lato comprises five sibling species. We report the isolation of an An. culicifacies species B strain which is completely refractory to Plasmodium vivax sporogonic development and partially refractory to P. falciparum. Parasite development in this strain is arrested by a melanotic encapsulation mechanism in the mid-gut. We compare the infectivity of this refractory strain and four other species B strains from different epidemiological zones of India with P. vivax in the laboratory.

335. Dev V, Phookan S, **Sharma VP**, Dash AP, Anand SP. Malaria parasite burden and treatment seeking behavior in ethnic communities of Assam, Northeastern India. *J Infect* 2006 Feb;*52*(2):131-9 PMID:16442438 doi:10.1016/j.jinf.2005.02.033
https://pubmed.ncbi.nlm.nih.gov/16442438/

ABSTRACT

Objectives: The objectives of the study were to define the infectious reservoir of malaria with particular reference to transmission dynamics of Plasmodium falciparum, and to ascertain the disease trends in view of the existing containment practices and treatment seeking behavior in malaria endemic communities of Assam, India. Methods: Cross-sectional surveys were conducted in population groups of malaria endemic districts of the

state to determine parasite prevalence, and data were analysed retrospectively for the years 1991-2003 to ascertain the disease trends. Structured questionnaire based surveys were conducted to study the treatment seeking behavior and practices of healthcare providers. Results: P. falciparum and P. vivax were the only two parasite species encountered, the former being in the majority (>60%). Malaria transmission was persistent, and a seasonal peak of P. falciparum was consistently observed during the months of heavy rainfall (April to September). Among children (5-15 years) there was a significantly higher malaria parasite rate as compared to the <5 years age group and adults (>15 years). There was a decline in parasite rates for all age groups over the years of the study that could not be attributed to vector control intervention intensities and/or meteorological factors.Conclusions: The persistence of P. falciparum is attributed to the emergence of drug resistant varieties, inadequate interventions and treatment seeking patterns, and for its containment focused intervention measures are advocated in partnership with the communities.

KEYWORDS: Malaria Plasmodium falciparumP. vivaxAnopheles minimusDrug resistanceTransmission dynamicsTreatment seeking behaviorPrevention and control.

2007

336. **Sharma VP**. Battling the malaria iceberg with chloroquine in India. *Malar J* 2007 Aug *7*;6:105. doi:10.1186/1475-2875-6-105. PMID:17683630. https://pubmed.ncbi.nlm.nih.gov/17683630/

ABSTRACT

The National Vector Borne Disease Control Programme (NVBDCP) of the Ministry of Health, Government of India is reporting about 2 million parasite positive cases each year, although case incidence is 30-fold or more under-estimated. Forty five to fifty percent of Plasmodium infections are caused by Plasmodium falciparum, the killer parasite. Anti-malaria drug policy (2007) of the NVBDC recommends chloroquine (CQ) as the first line of drug for the treatment of all malarias. In a Primary Health Centre (PHC) reporting 10% or more cases of CQ resistance in P. falciparum, ACT blister pack

is recommended and, so far, the policy has been adopted in 261 PHCs of 71 districts. The NVBDCP still depends on CQ to combat malaria and, as a result, P. falciparum has taken deep roots in malaria-endemic regions, causing unacceptable levels of morbidity and mortality. This policy was a subject of criticism in recent Nature and Lancet articles questioning the World Bank's decision to supply CQ to the NVBDCP. Continuation of an outdated drug in the treatment of P. falciparum is counterproductive in fighting drug resistant malaria and in the containment of P. falciparum. Switchover to Artemisinin-based Combination Therapy (ACT) in the treatment of all P. falciparum cases, ban on artemisinin monotherapy and effective vector control (treated nets/efficient insecticide spraying) would be a rational approach to malaria control in India.

337. **Sharma VP.** Malaria outbreak in a hotel construction site in South Delhi. *Malar J*, 2007 Aug,*6*:105. doi:10.1186/1475-2875-6-105. PMID:17683630.

2009

338. **Sharma VP.** Hidden burden of malaria in Indian women. *Malar J* 2009 Dec *8;*8:281. doi: 10.1186/1475-2875-8-281 PMID:19995437.
https://pubmed.ncbi.nlm.nih.gov/19995437/

ABSTRACT

Malaria is endemic in India with an estimated 70-100 million cases each year (1.6-1.8 million reported by NVBDCP); of this 50-55% are Plasmodium vivax and 45-50% Plasmodium falciparum. A recent study on malaria in pregnancy reported from undivided Madhya Pradesh state (includes Chhattisgarh state), that an estimated over 220,000 pregnant women contract malaria infection each year. Malaria in pregnancy caused-abortions 34.5%; stillbirths 9%; and maternal deaths 0.45%. Bulk of this tragic outcome can be averted by following the Roll Back Malaria/WHO recommendations of the use of malaria prevention i.e. indoor residual spraying (IRS)/insecticide-treated bed nets (ITN) preferably long-lasting treated bed nets (LLIN); intermittent preventive therapy (IPT); early diagnosis, prompt and complete treatment using microscopic/malaria rapid

diagnostics test (RDT) and case management. High incidence in pregnancy has arisen because of malaria surveillance lacking coverage, lack of age and sex wise data, staff shortages, and intermittent preventive treatment (IPT) applicable in high transmission states/pockets is not included in the national drug policy- an essential component of fighting malaria in pregnancy in African settings. Inadequate surveillance and gross under-reporting has been highlighted time and again for over three decades. As a result the huge problem of malaria in pregnancy reported occasionally by researchers has remained hidden. Malaria in pregnancy may quicken severity in patients with drug resistant parasites, anaemia, endemic poverty, and malnutrition. There is, therefore, urgent need to streamline malaria control strategies to make a difference in tackling this grim scenario in human health.

339. Dev V, **Sharma VP**, Hojai D. Malaria transmission and disease burden in Assam: challenges and opportunities. *J Parasit Dis* 2009 Dec;*33*(1-2):13–22. doi:10.1007/s12639-009-0002-7. PMID:23129883.
https://pubmed.ncbi.nlm.nih.gov/23129883/

ABSTRACT

Malaria is major public health illness in Assam and 30-40% of the population is estimated to be at high-risk. Despite decades of attempted control interventions, malaria transmission is perennial and persistent in most parts of the state mostly transmitted by Anopheles minimus. Malaria outbreaks are returning associated with high rise in Plasmodium falciparum and attributable death cases. Therapeutic efficacy investigations for treatment of malaria revealed that chloroquine resistance was widespread for which artemisinin-based combination therapy (ACT) is being instituted in the control program. For data based on the preceding years, we briefly reviewed the available information on transmission dynamics, vector biology and control, drug policy, and discuss the challenges and opportunities for strengthening interventions for malaria control to help design situation specific strategies to check impending disease outbreaks with special reference to Assam. Under increased assistance from external agencies, we strongly advocate scaling up interventions based on mass distribution of long-lasting insecticidal

nets (LLINs) for prevention and ACTs for treatment of drug-resistant malaria, and developing strong health delivery system in high-risk areas for meeting the complex emergencies and achieving transmission reduction.

2010

340. Neeraj Dhingra, Prabhat Jha, **VP Sharma**, Alan A Cohen, Raju M Jotkar, Peter S Rodriguez, Diego G Bassani, Wilson Suraweera, Ramanan Laxminarayan and Richard Peto, Adult and child malaria mortality in India: a nationally representative mortality survey. *Lancet* 2010 Nov 20;*376*(9754):1768–74. doi:10.1016/S0140-6736(10)60831. PMID: 20970179.
https://pubmed.ncbi.nlm.nih.gov/20970179/

ABSTRACT

Background: National malaria death rates are difficult to assess because reliably diagnosed malaria is likely to be cured, and deaths in the community from undiagnosed malaria could be misattributed in retrospective enquiries to other febrile causes of death, or vice-versa. We aimed to estimate plausible ranges of malaria mortality in India, the most populous country where the disease remains common.**Methods**: Full-time non-medical field workers interviewed families or other respondents about each of 122,000 deaths during 2001-03 in 6671 randomly selected areas of India, obtaining a half-page narrative plus answers to specific questions about the severity and course of any fevers. Each field report was sent to two of 130 trained physicians, who independently coded underlying causes, with discrepancies resolved either via anonymous reconciliation or adjudication.**Findings:** Of all coded deaths at ages 1 month to 70 years, 2681 (3·6%) of 75,342 were attributed to malaria. Of these, 2419 (90%) were in rural areas and 2311 (86%) were not in any health-care facility. Death rates attributed to malaria correlated geographically with local malaria transmission ratesderived independently from the Indian malaria control programme. The adjudicated results show 205,000 malaria deaths per year in India before age 70 years (55,000 in early childhood, 30,000 at ages 5-14 years, 120,000 at ages 15-69 years); 1·8% cumulative probability of death from malaria

before age 70 years. Plausible lower and upper bounds (on the basis of only the initial coding) were 125,000-277,000. Malaria accounted for a substantial minority of about 1·3 million unattended rural fever deaths attributed to infectious diseases in people younger than 70 years.**Interpretation**: Despite uncertainty as to which unattended febrile deaths are from malaria, even the lower bound greatly exceeds the WHO estimate of only 15,000 malaria deaths per year in India (5000 early childhood, 10 000 thereafter). This low estimate should be reconsidered, as should the low WHO estimate of adult malaria deaths worldwide.**Funding**: US National Institutes of Health, Canadian Institute of Health Research, Li Ka Shing Knowledge Institute.

341. Cohen AA, Dhingra N, Jotkar RM, Rodriguez PS, **Sharma VP**, Jha P. The Summary Index of Malaria Surveillance (SIMS): a stable index of malaria within India. *Popul Health Metr* 2010 Feb 11;8:1. doi:10.1186/1478-7954-8-1. PMID:20181218. https://pubmed.ncbi.nlm.nih.gov/20181218/

ABSTRACT

Background: Malaria in India has been difficult to measure. Mortality and morbidity are not comprehensively reported, impeding efforts to track changes in disease burden. However, a set of blood measures has been collected regularly by the National Malaria Control Program in most districts since 1958.**Methods:** Here, we use principal components analysis to combine these measures into a single index, the Summary Index of Malaria Surveillance (SIMS), and then test its temporal and geographic stability using subsets of the data.**Results:** The SIMS correlates positively with all its individual components and with external measures of mortality and morbidity. It is highly consistent and stable over time (1995-2005) and regions of India. It includes measures of both vivax and falciparum malaria, with vivax dominant at lower transmission levels and falciparum dominant at higher transmission levels, perhaps due to ecological specialization of the species.**Conclusions:** This measure should provide a useful tool for researchers looking to summarize geographic or temporal trends in malaria in India, and can be readily applied by administrators with no mathematical or scientific background. We include a spreadsheet that allows simple calculation of the index for researchers and local

administrators. Similar principles are likely applicable worldwide, though further validation is needed before using the SIMS outside India.

2011

342. **Sharma VP.** Editorial. *J Parasit Dis* 2011 Oct;*35*(2):85–6. doi**:**10.1007/s12639-011-0080-1. PMID:23024486.
https://pubmed.ncbi.nlm.nih.gov/23024486/

2012

343. **Sharma VP**. Battling malaria iceberg incorporating strategic reforms in achieving Millennium Development Goals & malaria elimination in India. *Indian J Med Res* 2012 Dec;*136*(6):907–25.PMID:23391787.
https://pubmed.ncbi.nlm.nih.gov/23391787/

ABSTRACT

Malaria control in India has occupied high priority in health sector consuming major resources of the Central and State governments. Several new initiatives were launched from time to time supported by foreign aids but malaria situation has remained static and worsened in years of good rainfall. At times malaria relented temporarily but returned with vengeance at the local, regional and national level, becoming more resilient by acquiring resistance in the vectors and the parasites. National developments to improve the economy, without health impact assessment, have had adverse consequences by providing enormous breeding grounds for the vectors that have become refractory to interventions. As a result, malaria prospers and its control is in dilemma, as finding additional resources is becoming difficult with the ongoing financial crisis. Endemic countries must contribute to make up the needed resources, if malaria is to be contained. Malaria control requires long term planning, one that will reduce receptivity and vulnerability, and uninterrupted financial support for sustained interventions. While this seems to be a far cry, the environment is becoming more receptive for vectors, and epidemics visit the country diverting major resources in their containment, e.g. malaria,

dengue and dengue haemorrhagic fevers, and Chikungunya virus infection. In the last six decades malaria has taken deep roots and diversified into various ecotypes, the control of these ecotypes requires local knowledge about the vectors and the parasites. In this review we outline the historical account of malaria and methods of control that have lifted the national economy in many countries. While battles against malaria should continue at the local level, there is a need for large scale environmental improvement. Global Fund for AIDS, Tuberculosis and Malaria has provided huge funds for malaria control worldwide touching US$ 2 billion in 2011. Unfortunately it is likely to decline to US$ 1.5 billion in the coming years against the annual requirement of US$ 5 billion. While appreciating the foreign assistance, we wish to highlight the fact that unless we have internal strength of resources and manpower, sustained battles against malaria may face serious problems in achieving the final goal of malaria elimination.

2013

344. Rajni Kant , S Haq, H C Srivastava, **Sharma VP**. Review of the bioenvironmental methods for malaria control with special reference to the use of larvivorous fishes and composite fish culture in central Gujarat. *India J Vector Borne Dis* 2013 Mar;*50*(1):1–12. PMID:23703433.
https://pubmed.ncbi.nlm.nih.gov/23703433/

ABSTRACT

Mosquito control with the use of insecticides is faced with the challenges of insecticide resistance in disease vectors, community refusal, their high cost, operational difficulties, and environmental concern. In view of this, integrated vector control strategies with the use of larvivorous fishes such as Guppy (Poecilia reticulata) and Gambusia (G. affinis) as biological control agents were used in controlling mosquito breeding in different types of breeding places such as intradomestic containers, various types of wells, rice-fields, pools, ponds and elsewhere in malaria prone rural areas of central Gujarat. Attempts were also made to demonstrate composite fish culture in unused abandoned village ponds by culturing Guppy along with the food fishes such as Rohu (Labeo rohita), Catla (Catla

catla) and Mrigal (Cirrhinus mrigala). Income generated from these ponds through sale of fishes was utilized for mosquito control and village development. The technology was later adopted by the villagers themselves and food fish culture was practised in 23 ponds which generated an income of Rs 1,02,50,992 between 1985 and 2008. The number of villages increased from 13 to 23 in 2008 and there was also gradual increase of income from Rs 3,66,245 in 1985-90 to Rs 55,06,127 in 2002-08 block. It is concluded that larvivorous fishes can be useful tool in controlling mosquito breeding in certain situations and their use along with composite fish culture may also generate income to make the programme self-sustainable

2015

345. **Sharma VP**, Dev V. Biology & control of Anopheles culicifacies Giles 1901. *Indian J Med Res*2015May;*141*(5):525–36. doi:10.4103/0971-5916.159509. PMID:26139769
https://pubmed.ncbi.nlm.nih.gov/26139769/

ABSTRACT

Malaria epidemiology is complex due to multiplicity of disease vectors, sibling species complex and variations in bionomical characteristics, vast varied terrain, various ecological determinants. There are six major mosquito vector taxa in India, viz. Anopheles culicifacies, An. fluviatilis, An. stephensi, An. minimus, An. dirus and An. sundaicus. Among these, An. culicifacies is widely distributed and considered the most important vector throughout the plains and forests of India for generating bulk of malaria cases (>60% annually). Major malaria epidemics are caused by An. culicifaices. It is also the vector of tribal malaria except parts of Odisha and Northeastern States of India. An. culicifacies has been the cause of perennial malaria transmission in forests, and over the years penetrated the deforested areas of Northeast. An. culicifacies participates in malaria transmission either alone or along with An. stephensi or An. fluviatilis. The National Vector Borne Disease Control Programme (NVBDCP) spends about 80 per cent malaria control budget annually in the control of An. culicifacies, yet it remains one of the most

formidable challenges in India. With recent advances in molecular biology there has been a significant added knowledge in understanding the biology, ecology, genetics and response to interventions, requiring stratification for cost-effective and sustainable malaria control. Research leading to newer interventions that are evidence-based, community oriented and sustainable would be useful in tackling the emerging challenges in malaria control. Current priority areas of research should include in-depth vector biology and control in problem pockets, preparation of malaria-risk maps for focused and selective interventions, monitoring insecticide resistance, cross-border initiative and data sharing, and coordinated control efforts for achieving transmission reduction, and control of drug-resistant malaria. The present review on An. culicifacies provides updated information on vector biology and control outlining thrust areas of research.

346. V Dev, **Sharma VP**, K Barman. Mosquito-borne diseases in Assam, north-east India: current status and key challenges. *WHO South East Asia J Public Health* 2015 Jan-Jun;*4*(1):20–29. doi: 10.4103/2224-3151.206616. PMID:28607271.
https://pubmed.ncbi.nlm.nih.gov/28607271/

ABSTRACT

Mosquito-borne diseases, including malaria, Japanese encephalitis (JE), lymphatic filariasis and dengue, are major public health concerns in the north-eastern state of Assam, deterring equitable socioeconomic and industrial development. Among these, malaria and JE are the predominant infections and are spread across the state. The incidence of malaria is, however, gradually receding, with a consistent decline in cases over the past few years, although entry and spread of artemisinin-resistant Plasmodium falciparum remains a real threat in the country. JE, formerly endemic in upper Assam, is currently spreading fast across the state, with confirmed cases and a high case-fatality rate affecting all ages. Lymphatic filariasisis is prevalent but its distribution is confined to a few districts and disease transmission is steadily declining. Dengue has recently invaded the state, with a large concentration of cases in Guwahati city that are spreading to suburban areas. Control of these diseases requires robust disease surveillance and integrated vector management on a sustained basis, ensuring universal coverage of

evidence-based key interventions based on sound epidemiological data. This paper aims to present a comprehensive review of the status of vector-borne diseases in Assam and to address the key challenges.

347. **Sharma VP,** Vas Dev, Sobhan Phookan**.** Neglected Plasmodium vivax malaria in northeastern States of India. *Indian J Med Re.* 2015 May;*141*(5):546–55. doi**:**10.4103/0971-5916.159511. PMID: 26139.
https://pubmed.ncbi.nlm.nih.gov/26139771/

ABSTRACT

Background & objectives: The northeastern States of India are co-endemic for Plasmodium falciparum and P. vivax malaria. The transmission intensity is low-to-moderate resulting in intermediate to stable malaria. Malaria control prioritized P. falciparum being the predominant and life threatening infection (>70%). P. vivax malaria remained somewhat neglected. The present study provides a status report of P. vivax malaria in the northeastern States of India. **Methods**: Data on spatial distribution of P. vivax from seven northeastern States (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura) were analysed retrospectively from 2008-2013. In addition, cross-sectional malarial surveys were conducted during 1991-2012 in malaria endemic pockets across the States of Assam, Meghalaya, Mizoram and Tripura to ascertain the prevalence of P. vivax in different age groups. **Results:** Vivax malaria was encountered in all northeastern States but there existed a clear division of two malaria ecotypes supporting ≤30 and >30 per cent of total malaria cases. High proportions of P. vivax cases (60-80%) were seen in Arunachal Pradesh and Nagaland in the north with alpine environment, 42-67 per cent in Manipur, whereas in Assam it varied from 23-31 per cent with subtropical and tropical climate. Meghalaya, Tripura and Mizoram had the lowest proportion of P. vivax cases. Malaria cases were recorded in all age groups but a higher proportion of P. vivax consistently occurred among <5 yr age group compared to P. falciparum ($P<0.05$). P. vivax cases were recorded throughout the year with peak coinciding with rainy season although transmission intensity and duration varied. **Interpretation & conclusions:** In northeast India, P. vivax is a neglected infection.

Estimating the relapsing pattern and transmission dynamics of P. vivax in various ecological settings is an important pre-requisite for planning malaria elimination in the northeastern States.

Books/Chapters/Proceedings/Symposium/Monograph: A-Z

348. **Sharma VP**. "A comparison of vector control through specialized services, general health services and primary health care/community". ***Geneva:World Health Organization 1985. https://apps.who.int/iris/handle/10665/58577***

349. **Sharma VP**. "A comparison of vector control through specialized services, general health services and primary health care/community**". *Geneva: World Health Organization 1986 Nov 4–10:1-27. https://apps.who.int/iris/handle/10665/58577***

350. Dutta, GP, Bharti Joshi, Renu Bajpai, Bhalla SC and **Sharma VP**. "Application of Indirect Fluorescent Antibody Test in the Epidemiology of Malaria". ***Seroepidemilogy of Human Malaria 1989.***

351. Subbarao, Sarala K, Vasantha K, **Sharma VP**. "Cytotaxonomy of certain malaria vectors in India". ***Biosystematics of haematophagous insects. Oxford:Clarendon 1988:25–37.***

352. **Sharma VP**. Presented paper on "Drug resistance in *P. falciparum* malaria in India". Proceedings of the Indo-UK Workshop on Malaria, Delhi on Nov. 14–19 at *Malaria Research Centre,1984:169–184.*

353. **Sharma VP**. Presented paper on "Field experiments with thiotepasterilized Culex quinquefasciatus in India: In Integrated mosquito control methodologies", In: Marshal Laird & James W. Miles, editors. ***Malaria: Problems of pollution and prospects of integrated disease vector control in India, Department of Environment New Delhi, Academic Press Inc., London 1985.***

354. Dev V, Sahi B and **Sharma VP**." Field trials with insecticide-impregnated bednets for malaria control in Assam". ***Tropical Diseases, Molecular Biology and Control Strategies. New Delhi: Publication and Information Directorate, CSIR 1994: 387-396.***

355. **Sharma VP**. "General Epidemiology of malaria on Indian perspective". Proceeedings of the workshop on genetic epidemiology approaches to health care. ***New Delhi:NIHFW Publication 1985.***

356. Nagpal BN, Saxena Rekha and **Sharma VP**." Geographic Information System: Role in malaria control". ***Noida: GIS @ development 1997; Sept-Oct.***

357. Subbarao K, Sarala K, **Sharma VP**. "Genetics and Cytogenetics of Indian anophelines". Proceedings of International Congress of Genetics. ***New Delhi:Oxford and IBH Publishing Co. 1983 Dec 12-2:113–124.***

358. **Sharma VP**. Presented paper on "Genetic control of Mosquitoes". Symposium Hundred years of Malaria Research at Calcutta from 17-19 January 1980.

359. **Sharma VP**. Paper presented on "Genetics of malaria vectors". Colloquim on gene cloning organized by Dr. G.P. Talwar at All India Institute of Medical Sciences, New Delhi from 4-7 March, 1981.

360. **Sharma VP**. Presented paper on "Genetics of An. Stephensi". XVI International Congress of Entomology at Japan from 3- 9 August 1980.

361. Srivastava A, Nagpal BN and **Shrama VP**. "GIS to predict distribution of malaria vector An. sundaicus in India". Proceeding of GIS 98/RT 98. International Conference at Toronto Canada. April:274-276.

362. **Sharma VP**. Present paper on"Insecticide resistance in Indian Anophelines" symposium on Insect Vector Biology organized by the ***Indian National Science Academy Madras from 22-24 November, 1979.***

363. **Sharma VP**. "Integration of malaria vaccines in the health delivery system in India". Proceeding of the first Asia and Pacific conference on malaria, Honolulu, USA from 21–27 April, 1985.

364. Nagpal BN, Saxena Rekha and **Sharma VP**. "Land scape ecology approach to study distribution of malaria vectors in India". Proceedings of IInd Annual ESRI/ERDAS 97 USER Conference.

365. Dutta G, Gautam AS, **Sharma VP**, Renu Bajpai and Agarwal SS. "Large Scale Screening of field sera by IHA Test in Nadiad (Gujarat)". ***Seroepidemilogy of Human Malaria1989.***

366. Dutta GP, Renu Bajpai, Pramodini EL, Aruna Srivastava, Ramesh Kumar, Ansari MA, Choudhury DS and **Sharma VP**. "Large scale Screening of field Sera in assessment of Malria using indirect haemagglutination test". ***Seroepidemilogy of Human Malaria 1989.***

367. **Sharma, VP**. and SK Subbarao. "Malaria Control- Cytotaxonomy in the management of vector populations in India". In: Mohammad Shamim, editors. ***Zoological survey of India:195–200.***

368. **Sharma VP**, Ansari MA and Razdan RK. "Malaria Control". In: Randhawa NS and Parmar BS, editors. Neem Resarch and Development. India: ***Publication No.3 Society of Pesticide Science:235-24.***

369. **Sharma VP**. Presented paper on "Malaria: Public Health Aspects. In Molecular Genetic Approached to Vaccination". IIIrd Annual Symposium, Ranbaxy Science Foundation 1997:46-52.

370. **Sharma VP**. "Malaria: current situation and future control strategies". Proceeding of first Asia and Pacific conference on malaria from 20-27 April 1985 at Honolulu, USA.

371. Prasad RN, **Sharma VP**. "Relapse pattern of Pasmodium vivax cases treated with/without primaquine". ***New Delhi:Publication and Information Directorate,CSIR 1994:252–255.***

372. **Sharma VP**. Presented paper on "Return of Malaria". Proceedings of the International Symposium on Vectors & Vector Borne Diseases 1994.

373**. Sharma VP** and Ansari MA. "Role of fishes in vector control in India". ***Malaria Research Centre 1994:1–20.***

374. Kumar Ramesh, Rao SN, Ansari MA, Razdan RK, Srivastava Aruna and **Sharma VP**. "Seroepidemiology of Human Malaria in area near Delhi using IHA Test". ***Seroepidemilogy of Human Malaria 1989***.

375. **Sharma VP**, Subbarao SK. "Strategies of malaria vector control in india". ***Publication and Information Directorate, CSIR 1994:377–386.***

376. **Sharma VP**. "The Changing scenario of disease vector control in India". In: Srivastava US, editor. ***The National academy of Science New Delhi: Publishing house Allahabad India 1991:69-83.***

377. **Sharma, VP**. "Trends and approaches for its control". ***The National academy of Sciences. New Delhi: Publishing house Allahabad India1991:13–16.***

378. **Sharma VP**. "The green revolution in India and ecological secession of malaria vectors". Seventh Annual meeting of the joint WHO/FAQ/UNEP panel of experts on Environmental Management for vector control, Rome Sept 7-11,1987.

379. Malhotra MS and **Sharma VP**. "Use of Gambusia affinis in bioenvironmental control of mosquitoes in Haldwani district Naini Tal, U.P". ***Malaria Research Centre 1994:83–98.***

380. **Sharma VP** and Kirti JS. "Vector biology". Proceedings of the Internationla symposium on vectory biology at Patiala from 18-20 February, 2006. ***The National Academy of Sciencs, Allahabad (India).***

381. **Sharma VP**. "Vector mosquitoes". World Health Organization operational manual on chemical methods for mosquito control with special emphasis on disease vectors 1987.

382. **Sharma VP**, Vasudevan P, Satya Santosh and Sharma V (Eds.) (2007). *Women and Health care: Initiatives in vector control through community mobilization*.Indian Institute of Technology, New Delhi. Pp. i-viii+1-192.

SOURCE: A-Z

A

African Journal of Traditional, Complementary and Alternative Medicines (**1**)–333

American Journal of Tropical Medicine and Hygiene (**4**)– 263, 286,327,332

Annals of the Entomological Society of America (**6)**– 34,135,179,190,267,301

Annals of tropical medicine and parasitology (**6**)– 299,303,310,318,325,328

B

Biochemical. Genetics (**4**)– 51,141,151,235

Bioorganic & Medicinal Chemistry Letters (**1**)–324

Bulletin of Environmental Contamination and Toxicology (**8**)–182,227,232,275,280,319,320,321

Bulletin of Entomological Research (**1**)–234

Bulletin of World Health Organization (**4**)– 2,3,127,295

C

Clinical and diagnostic laboratory immunology (**1**) -317

Current Science (**8**)– 150 ,218,245,261,276,284,305,313

D

Diagnostic Microbiology and Infectious Disease (**1**)– 265

E

Experimental Parasitology (**1**)–118

ENTOMON (**1**)–322

F

Family Medicine India (**1**)– 229

H

Health Policy and Planning (**1**)– 149

I

ICMR Bulletin (**1**)–78

Infection and Immunity (**2**)–143,175

Indian Journal Experimental Biology (**1**)–217

Indian Journal of Malariology (**138**)–

22,23,24,25,26,27,28,30,31,32,35,37,38,39,41,42,43,44,45,46,47,48,49,50,52,53,54,55,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,73,76,77,80,82,83,84,85,86,87,88,89,90,91,92,93,94,97,98,100,101,102,105,107,109,110,111,112,114,115,116,117,120,122,123,124,129,131,132,133,134,136,138,140,142,144,148,153,154,155,156,159,161,163,165,168,169,172,173,176,178,180,183,187,192,196,197,199,201,204,207,208,210,211,215,216,222,225,228,241,242,243,255,257,260,270,278,279,283,288,289,300,315,316,323

Indian Journal Medical Research (**9**)–10,56,240,246,262,282,343,345,347

Indian Journal of Pediatrics (**1**)–213

Journal of Vector Borne Diseases (**1**)–344

Journal of Tropical Medicine and Hygiene (**1**)–206

International journal of clinical pharmacology research (**1**)–249

J

Journal of the American Heart Association (**1**)–157

Journal of the American Mosquito Control Association (**34**)–

95,96,99,113,125,130,139,145,147,160,167,170,171,177,186,188,195,203,223,226,230,239,247,251,252,264,271,272,273,274,281,302,306,311

Journal of the Association of Physicians of India (**1**)–312

Journal of Chromatography B: Biomedical Sciences and Applications (**4**)– 233,238,248,287

Journal of Chromatography (**2**)–137,268

L

M

N

P

Parassitologia (**1**)–293

Pollution Research (**1**)–290

Pesticide Research Journal **(1)**–198

Population Health Meter (**1**)–341

Proceedings of the Indian National Science Academy (**1**)–72

Parasitol Today (**1**)– 79

Public Health (**2**)–205,309

S

Social Science & Medicine Journal (**2**)–75,174

Southeast Asian Journal of Tropical Med Public Health (**14**)– 146, 181, 212, 221, 231,237, 244, 258, 269, 277, 285, 292, 298, 308

Science Age (**1**)–-74

T

Tropical Medicine (**1**)–250

Tropical Medicine and International Health (**2**)–224,334

Tropical Medicine and Parasitology (**1**)–128

Transactions of the Royal Society of Tropical Medicine and Hygiene (**9**)–104, 119, 121, 158, 164, 253, 259, 330, 331

W

WHO South East Asia Journal of Public Health (**1**)– 46

Publishers:A-Z

A

African Traditional Herbal Medicine Supporters Initiative **(1)**–333

All India Institute of Medical Sciences **(1)**–191

American Mosquito Control Association **(41)**–
6,15,40,95,96,99,113,125,126,130,139,145,47,160,166,167,170,171,177,186,188,195,202,203,220,223,226,230,239,247,251,252,264,271,272,273,274,281,302,306,311,

American Society for Microbiology **(3)**–143,175,317

American Society of Tropical Medicine and Hygiene **(5)**–206,263, 286,327,332

B

BioMed Central **(1)–**341

C

Cambridge University Press **(1)** – 234

E

EM International **(1) –** 290

Elsevier **(22)–**
1,75,79,118,137,174,193,194,205,233,238,265,268,248,287,294,309,324,326,329,335,340

Entomology **(1)–**322

F

Family Medicine India **(1)**- 229

H

Hindawi **(1)–**250

I

Indian Academy of Sciences **(8)**–150 ,218,245,261,276,284,305,313

Indian Council Of Medical Research **(10)**–10,56,78,240,246,262,282,343,345,347

Bioscience Ediprint Inc **(1)**–249

T

W