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Original Article

Studies on Mosquito Larvae (*Armigeres subalbatus*) (Coquilett 1898) in Suburban Area of West Bengal

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Abstract

Armigeres subalbatus is a day biting nuisance causing mosquito prevalent mostly in the rural area where the sanitation latrine exist. This study deals with the prevalence of larvae in different biotopes to get a comprehensive knowledge about its breeding spot with a view to control this menace. One year longitudinal survey indicate that in the study area sanitary chambers are the most favourite breeding sites of *Armigeres subalbatus* when statistical comparison is made between sanitary chamber and open drains connected with sanitary chamber. Sometimes larvae are found in domestic collection of foul water. In coconut shells and tree holes on rare occasions *Armigeres subalbatus* larvae are found. In the sanitary chambers *Psychoda* larvae are found to be associated with the larvae of *Armigeres subalbatus*. In the connecting drains its associates are the larvae of *Culex quinquefasciatus* and the larvae of *Aedes aegypti* and *Aedes albopictus* are found to be associated with the larvae of *Armigeres subalbatus* in coconut shells.

Keywords: *Armigeres Subalbatus; Larval Breeding Spot; Psychoda; Aedes Aegypti; Culex Quinquefasciatus;* Sanitary Chamber; Open Drain.

Introduction

Armigeres subalbatus (Coquilett 1898) is widely distributed in the villages and cities of India. It is big sized mosquito that bites human beings mainly in day time (VCRC, 2002 and Sil Das *et al.*,1983). Its bite is very painful and the mosquito creates nuisance. In urban situation, controlling nuisance causing mosquito like *Armigeres subalbatus* is necessary because people perceived impact of vector control operation with the relief from mosquito bite (VCRC, 2002). *Armigeres subalbatus* is reported to be a vector of *Wuchereria bancrofti* in Japan (Tanaka *et al*., 1979). It is the most efficient carrier of *Plasmodium gallinaceum* (Roy and Brown, 1970). Japanese encephalitis may also be transmitted by it, both naturally (Schichijio *et al*., 1998) and experimentally (Mitamura *et al*., 1940). Dirofilaria worm was also detected from wild caught *Armigeres subalbatus* (Vythilingam *et al*., 2005). The breeding places were sanitary chambers, open drains connected with the sanitary chambers, domesticated collection of foul water, coconut shells and tree holes where the larvae were found. The larvae of *Armigeres subalbatus* have been detected by previous researchers in the following spots such as septic tanks, earthen contaminated drains, domesticated collection of foul water, tree holes and coconut shell [Roy and Brown, 1970, Gartz, 1967 and Hati, 2001]. The objective of the study was to give recent data regarding month wise variation of abundance of larvae of *Armigeres subalbatus* in different stagnant water in Burdwan district, West Bengal.

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Materials and Methods

The data were collected from different affected villages of the Burdwan districts of West Bengal, India. The study was conducted from January to December 2010. For the collection of mosquito larvae three methods namely dipping, netting and pipetting advocated by WHO (1975) (Manual on Practical Entomology in Malaria, WHO Part II, 1975) were adopted in the present study.

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Data were analyzed by single way analysis of variance (ANOVA) and the significant difference between collected data was determined by using SPSS (Statistical Package for Social Sciences, Version 10.0).

Results and Discussion

Only in the sanitary chamber larvae of *Armigeres subalbatus* were presented in all the months of the years and number of collection was much higher (9305, 81.03 %) than that of the other (Table 1) breeding places. In open drains connected with the sanitary chamber, *Armigeres subalbatus* larvae were +ve in eleven months, but –ve only in the October. Total number of collection was 1296 (11.29%). It is quite possible that with the sludge water coming from the sanitary chambers, the larvae may have traveled from the sanitary chamber to the connecting drains. Sanitary chamber are found to be the most favourite breeding site of *Armigeres subalbatus*. When statistical comparisons are made between sanitary chambers and open air drains connected to the sanitary chambers, larvae are found in greater numbers in the former than the latter (Figure 1). Larvae/dip in the sanitary chambers varies from 1.33 to 7.51. The corresponding figures in the connecting drains are 0 to 1.61 respectively.

When the date were analyzed critically, though the larvae of *Armigeres subalbatus*are are found in each month of studied year, both in sanitary chamber and drains connecting with the sanitary chamber, the larvae have been found in greater number in the summer months than in other seasons. This finding tallies with the man biting experiments (VCRC, 2002 and Sil Das *et al.*, 1983). The summer is the preferred breeding season for *Armigeres subalbatus*.

Table 1 show that in the domestic collection of foul water, larvae were +ve in the month of June, July and November and – ve in other eight months. This type of biotype also seems not to be very suitable for the breeding of this species as overall larvae/ dip is 0.1 only. From table 1 it is evident that in tree holes the larvae of *Armigeres subalbatus* were +ve during the months of June and July and - ve during other ten months. In coconut shell the collection of larvae were +ve in June, July and August. Other nine months collection of larvae was –ve (Table 1).

Table 1. Month wise collection of *Armigeres subalbatus* larvae from different breeding spots

	Sanitary chamber		Open drain connected with sanitary chamber		Domestic collection of foul water		Tree holes		Coconut shells		Total	
Months	No. of larvae collected	%	No. of larvae collected	%	No. of larvae collected	%	No. of larvae collected	%	No. of larvae collected	%	No. of larvae collected	%
January	692	7.43	122	9.41	-	-	-	-	-	-	814	7.09
Febr.	665	7.15	111	8.56	-	-	-	-	-	-	776	6.76
March	1232	13.24	219	16.44	-	-	-	-	-	-	1451	12.63
April	1502	16.14	322	25.62	-	-	-	-	-	-	1834	15.97
May	1486	15.97	215	16.59	-	-	-	-	-	-	1701	14.81
June	542	5.82	77	5.94	42	35	148	67.89	237	56.83	1046	9.11
July	395	4.25	88	6.79	58	48.33	70	32.11	128	30.7	867	7.55
August	499	5.36	15	1.16	-	-	-	-	52	12.47	566	4.93
Sept.	409	4.4	12	0.93	-	-	-	-	-	-	421	3.67
October	265	2.85	0	0	-	-	-	-	-	-	265	2.31
Novem	930	9.99	92	6.33	20	16.67	-	-	-	-	1032	8.89
Decem.	688	7.39	23	1.77	-	-	-	-	-	-	711	6.2
Total	9305	81.03	1296	11.29	120	1.04	218	1.90	417	3.63	11484	

*200 dips in sanitary chamber and open drains connected with sanitary chamber. 80 dips in domestic collection of foul water

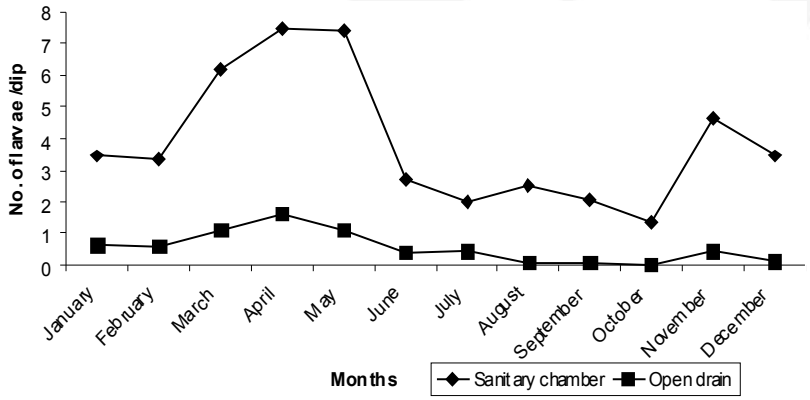

Fig. 1: *Armigeres subalbatus* larvae collection from sanitary chamber and drain in twelve month study period

In sanitary chamber *Psychoda* larvae and the larvae of *Culex quinquefasciatus* are found to be associated with the larvae of *Armigeres subalbatus*. In connecting drain its associates are the larvae of *Culex quinquefasciatus* and the larvae of *Aedes aegypti* and *Aedes albopictus* are found to be associated with the larvae of *Armigeres subalbatus* in coconut shells. In ponds, rice field and lake no larvae of *Armigeres subalbatus* were, however detected throughout the year.

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