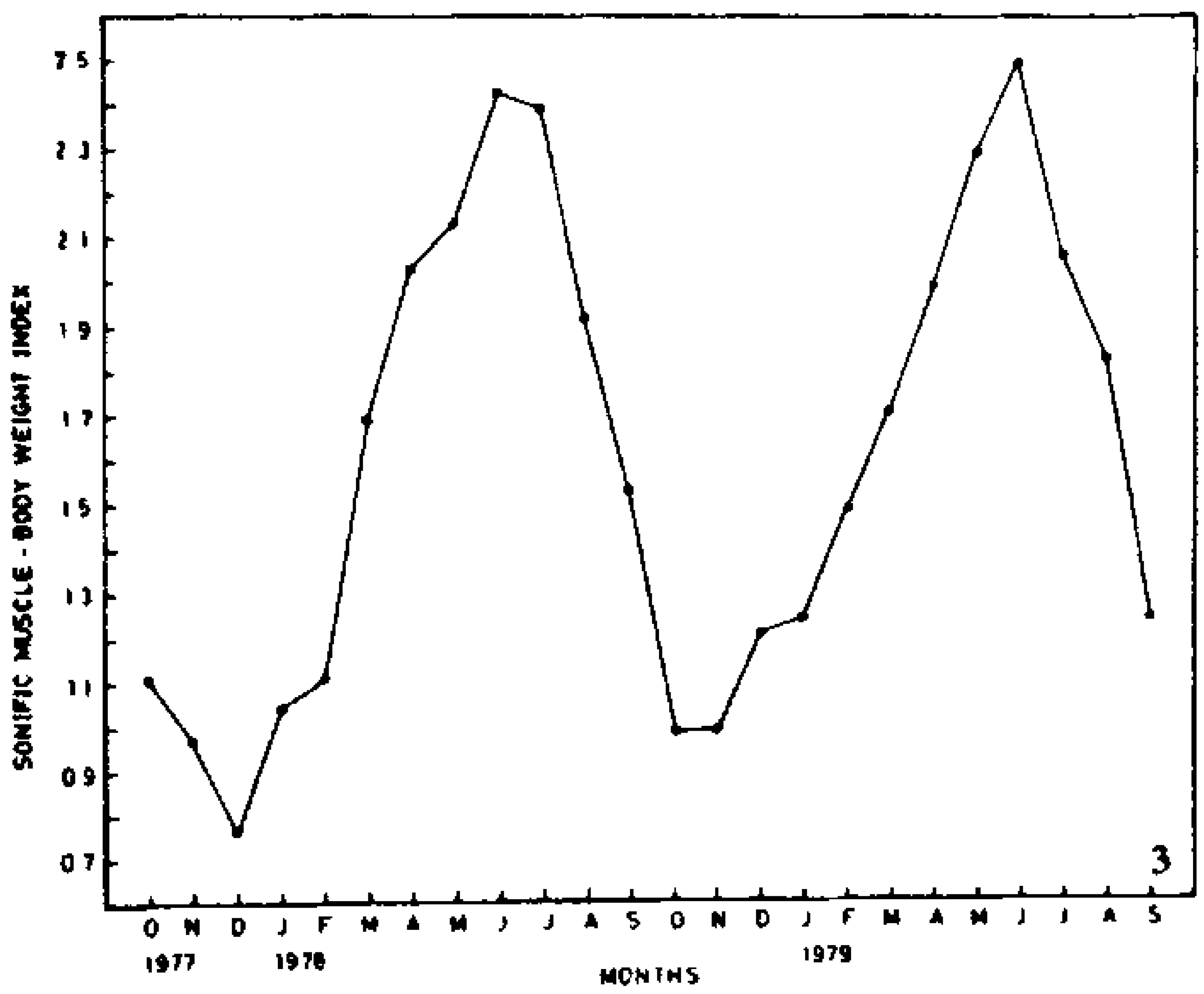

Figure 3. Monthly variations of sonific muscle-body weight index in *K. axillaris*.

mainly during breeding to bring out effectively in aggregation.

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1. Tower, R. W., *Ann. N.Y. Acad. Sci.*, 1908, **18**, 149.
2. Hardenburg, J. D. F., *Zool. Anz.*, 1934, **108**, 224.
3. Fish, M. P., *Copeia*, 1953, **1**, 98.
4. Schneider, H. and Hasler, A. D., *Z. Vergl. Physiol.*, 1960, **43**, 499.
5. Marshall, N. B., *Symp. Zool. Soc. London*, 1962, **7**, 45.
6. Schneider, H., *Z. Vergl. Physiol.*, 1964, **47**, 493.
7. Markl, H., *Z. Vergl. Physiol.*, 1971, **74**, 39.
8. Trewavas, E., *Trans. Zool. Soc. London*, 1977, **33**, 253.
9. Passoupathy, A., *Ph.D. Thesis, Annamalai University, Annamalainagar*, 1980.
10. Takita, T., *Bull. Fac. Fish. Nagasaki Univ.*, 1974, **38**, 1.
11. Templeman, W. and Hodder, V. M., *J. Fish. Res. Bd. Can.*, 1958, **15**, 355.

EFFECTS OF A CHITIN INHIBITOR COMPOUND ON FECUNDITY AND EGG VIABILITY IN *ANOPHELES STEPHENSI* [LISTON]

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REPORTED in the present communication are the results showing the efficacy of A13-29054 (N-[(chlorophenyl) amino) carbanyl)-2,6-diflurobenzamide)]) in reducing the reproductive potential of *Anopheles stephensi*, a known vector of urban malaria.

Takeshi *et al*[1], Schaefer *et al*[2] and Post and Vincent[3] have earlier reported the interference of several insect growth regulators with the egg hatching of mosquitoes.

A colony of *A. stephensi* was maintained in the laboratory at 28 ± 2°C and 70–80 % humidity and with a photoperiod of LD 10–14 hr. The compound was dissolved in acetone to obtain 1% (W/V) stock solution and the final concentrations of 0.001 to 0.0001 ppm (W/V) were prepared by adding the stock solution in the required volume of distilled water. Tween-80 was used as an emulsifier at the concentration of 0.02 % (V/V) in the final test solution.

Early fourth instar larvae were collected from the rearing trays and treated with different concentrations of the compound. The control with acetone and Tween-80 treated larvae was also run. The pupae developed from larvae treated differently were removed to separate cages for hatching. Sexing of adults soon after their emergence was done.

Adults emerged out of the treated and the untreated larvae were crossed. Reciprocal crosses were also run for each concentration in the ratio of 1 ♂ : 1 ♀. Twenty-five pairs were kept together for each concentration. The females were given a blood-meal and the eggs were collected thrice during the oviposition period of 10 days. The number of eggs laid and the larvae hatched out were recorded for each group.

The compound A13-29054 causes a dose-dependent reduction in the reproductive potential of the adults emerged from treated fourth instar larvae. The compound affects the reproductive capability of females, only at the highest concentrations tested (0.001 ppm and 0.0005 ppm) as is evident by reduction in the production of eggs (table 1). A maximum reduction in egg-laying (28.6 %) was observed when the males emerged from treated larvae were crossed with the females, emerged from untreated larvae. This indicates

Table 1 *Effect of compound A 13–29054 on the reproductive potential of A. stephensi*

Treated Sex	Concen-tration in ppm*	Total No. of eggs laid	Eggs laid per female	Per cent reduction in egg/female	Total No. of larvae hatched	Per cent hatch	Per cent steri-lity
	0.001	2385	95.4[a]	13.20	50	52.41	47.50
Both	0.0005	2500	100.0[a]	8.00	73	73.00	27.00
sexes	0.0001	2658	106.32[b]	1.58	81	76.18	23.82
treated	Control	2700	108.0	–	100	92.59	7.41
Untreated	0.001	2200	88.0[a]	28.63	55	62.50	37.5
females	0.0005	2483	99.32[a]	15.97	78	78.53	21.47
× treated	0.0001	2725	109.0[b]	3.85	91	83.48	16.52
males	Control	2830	113.2	–	107.2	94.69	5.31
Treated females	0.001	2075	83.0[a]	26.02	48	57.83	42.17
× untreated	0.0005	2300	92.0[a]	13.69	70	76.08	23.92
males	0.0001	2450	98.5[a]	6.19	80	81.21	18.79
	Control	2615	104.6	–	98	93.69	6.31

* 25 pairs were crossed at each dose level

[a] Values are significantly different from control ($P < 0.01$)

[b] No significant difference between treated and control values ($P > 0.1$)

the differential sexual sensitivity of the compound.

Considerable fall in the egg hatching suggests that the compound significantly reduces the viability also of the eggs. The induced maximum sterility of 47.6% is recorded when the adults emerged from the larvae treated at 0.001 ppm were crossed (table 1).

It has been reported by several workers that diflubenzuron inhibits the incorporation of glucose in the biosynthesis of chitin in immature stages[4–6]. This explains the failure of the mosquito larva to hatch out of the egg. How exactly the treated males affect the egg-hatch needs further study.

Since the data convincingly demonstrate that this compound adversely affects the fecundity and the viability of eggs and imposes sterility, it exhibits the potentiality to suppress the mosquito population.

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1. Takeshi, M., Schaefer, C. H., Richard, M., Takahasi and Fred, S., Mulligan III, *J. Econ. Entomol.*, 1976, **69**, 655.
2. Schaefer, C. H., Wilder, W. H. and Mulligan III, *J. Econ. Entomol.*, 1975, **68**, 183.
3. Post, L. C. and Vincent, W. R., *Naturwissenchaften*, 1973, **60**, 431.
4. Sowa, B. A. and Marks, E. P., *Insect Biochem.*, 1975, **5**, 855.
5. Saxena, S. C. and Kumar, V., *Entomology*, 1982, **7**, 141, 855.
6. Saxena, S. C. and Mathur, G., *J. Adv. Zool.*, 1980b, **2**, 1.

EFFECT OF LIGHT ON BRAIN NEUROSECRETORY CELLS OF THE HONEY BEE, *APIS CERANA INDICA* AND ITS SIGNIFICANCE IN SCREENING PIGMENT MOVEMENT OF THE COMPOUND EYE

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In insects with apposition type of compound eye, the light and dark-adaptation is associated with radial movement of screening pigments. In the dark-adapted state the sacks of the endoplasmic reticulum known as palisade surround the rhabdom. A major portion of the retinula cell, up to one-third of its width from the rhabdom, is occupied by elongate large vesicles of the