concentration was 7·88 μg/l in surface waters and 6·55 μg/l in bottom waters. Pigment ratios (O.D. 430/O.D. 665) were 4·6 and 7·3 in samples from surface and bottom waters respectively.

Blue green algae usually dominate in conditions of high H_2S, low pH and oxygen[7], limited light and nutrient concentrations[8] and thus, by and large, abound in waters which have relatively high ecological/physiological stresses. Damdama Lake with a dominant blue-green algal flora presents the above chemical characteristics associated with stress. Further, the greater abundance of *M. minima* with increasing depth suggests that this taxon has the capability to survive under stress conditions prevailing in the hypolimnion.

Blue and green light which penetrate the lower layers of water have been suggested to induce pigment changes in several algae[9–12]. The development in *M. minima*, of a pink pigment which has better absorption potential of blue and green light may be explained on the basis of the above-mentioned observations. Similarity in chlorophyll a contents of the two layers of water with different pigment contents may also support such a contention as changes of this kind may result in increased utilization of the available wavelengths under limiting light conditions.

The data presented indicate not only the ecological success of *M. minima* under stresses but its unique adaptive potential for survival through synthesis of a colouring pigment as well. However, the nature of the pink pigment and its photobiological role would require further experimentation.

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EFFECTIVENESS OF JH-MIMIC HYDROPRENE FOR THE CONTROL OF *CULEX FATIGANS* WEID.

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MORE than five thousand JH mimics have been prepared over the last twelve years. Some of them are specific in action while others have broad activity. Methoprene is recently licensed for the control of flood water mosquitoes when applied at less than 1 part per billion in their breeding water and without any adverse effect on any other aquatic fauna, (Riddiford and Truman)[1]. Another JH-mimic kinoprene is specific in action mainly acting systematically to control aphids. The use of juvenile hormone (JH) as an insecticide was first advocated by Williams[2]. He prepared the first active extract of JH from Cecropia moths, *Hyalophora cecropia* (L.) and showed that injection or topical application of this extract to young Lepidopterous pupae blocked adult differentiation. The insect growth regulators are marvellous type of chemicals which are not only effective pesticides but in some instances act as sterilants. Curiously enough they are also safest to use without any adverse effect on non-target organisms (Phanthumachinda and Wattanachai)[4]. Slama and Williams[1] discovered that a crude extract of JH analogue Juvabione would prevent hatching of the eggs of *Pyrrhocoris apterus* when applied either to the female bug or to the freshly laid eggs. Hoppe *et al.*[5] in their field trials in *Culex pipiens* found R–20458 as active and potent on the species as the Methoprene. The observations of Wongsiri (Personal communication)[6] revealed that Methoprene gave 66% mortality when applied to the 2nd instar larvae of yellow fever mosquito, *Aedes aegypti* at a dose of 0·01 parts per million. Like other JH mimics, the hydroprene also controls insects mainly in two ways, either by interfering in the embryonic development or by the prevention of metamorphosis. The hormone proved its sterilizing effect on *Cydia pomonella* in Bulgaria when applied to the pupae at the dose of 20–100 μg. The

TABLE I

The effect of hydroprene on larvae and pupae of Culex fatigans

a Concentration %	No. dead larvae — Days after treatment 1	2	3	4	5	Total	% Larval mortality	% Pupal mortality	% Adult emergence
2·0	49	1	..	..	..	50	100·0	..	..
1·0	47	3	..	..	..	50	100·0	..	..
0·5	9	6	5	2	2	24	48·0	52·0	..
Control	0	0	0	0	0	0·0	0·0	0·0	94·0

a = Average from three replicates.

highest dose of 100 μg induced almost complete sterility in both sexes. (Velcheva)[7]. Crochard[8] found that the hydroprene was effective on the eggs of *Gryllus bimaculatus* during the second phase of blastokinesis and also at the time of maximum increase in egg size.

A review of literature clearly reveals the fact that although a considerable work has been done on the efficiency of synthetic juvenile hormones on a number of pest species including mosquitoes, yet, there is a lack of adequate information regarding the effects of juvenile hormones on the predominant Indian mosquito species, *Culex fatigans* which acts as the vector of the filarial worm, *Wuchereria bancrofti*. The present investigations are, therefore, undertaken to find out the effect of a juvenile hormone, hydroprene on this species.

During the present investigation, the eggs of normal strain of *C. fatigans* were allowed to hatch in the laboratory. The freshly emerged first instar larvae were kept in the enamel trays for further rearing at 27 $\pm$ 1° C. Solutions of different concentrations of hydroprene were prepared in acetone and 2 c.c. each of 2·0%, 1·0% and 0·5% concentration were dissolved in the trays containing 2 litres of water. Fifty larvae were kept in each tray. An untreated check having the same number of larvae as in treated dishes was also kept for further observations. Three replicates of each concentration were taken for observations. The results are presented in Table I. These results show that the JH mimic hydroxene has shown a potentiality to kill the larvae when exposed at 2·0% and 1·0% concentrations and 100% mortality was observed. However, some of the first instar larvae have moulted into 2nd instar but subsequently all of them died after second day of treatment. Most of the first instar larvae when exposed at 0·5% concentration succeeded to reach upto third instars and also pupated while the rest died either after 24 hours of treatment or after moulting into second or third instar. It is quite clear from the data that while 30% larvae died within two days of the treatment, only 18% died afterwards. The 52% pupae so formed also died without emergence of adults.

It may, therefore, be concluded that the high concentration of hormone completely checks the development of larvae and lower concentration partly checks the growth. The high larval mortality with the application of hormone may be due to its easy penetration through delicate cuticular layers, thereby increasing the mortality rate at higher concentrations. The obvious effect of the JH mimic hydroprene is the interference in the synthesis of chitin during the moulting of larvae into successive instars or in the transformation of larvae into pupae.

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