corresponding fraction of the former. These variations point out the distinct difference in the metabolic activity of the two isolates. Variation in the climatic conditions to which an organism is continuously exposed may alter its physiologic activity and such an altered physiology may become irreversible. The evidence presented here indicates that the Hebbal and Hyderabad isolates differ in their metabolic activity so much as to warrant their grouping as two distinct strains of *X. oryzae.*

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EFFECT OF VOLUME OF WATER ON PREDATORY EFFICIENCY OF THE FISH *COMBUSIA AFFINIS*

MOSQUITO larvae belonging to different species of *Anopheles* and *Culex* are known to thrive in paddy fields[1]. Due to watering/rain or evaporation, the volume of water in the paddy fields may vary. In a previous note we have reported[2] that both the feeding progression and predatory efficiency of *Gambusia affinis* fed on the larvae of *Culex fatigans* depend upon the properties of the predator and prey. Since every organism requires a minimum amount of space, within which it can carry on its necessary 'exchanges with the environment[3], in the present note effect of an environmental situation such as volume of water available per fish on the predatory efficiency of *G. affinis* is reported.

Individuals of *Gambusia affinis* were divided into 3 groups on the basis of their sex and physiological status, namely: 1. males, 2. non-gestating females and 3. gestating females. Five individuals were taken from each group by random choice (from the laboratory population) for each experiment. The fish were placed in different aquaria containing 3,000, 2,500, 2,000, 1,500, 1,000, 750, 500 and 250 ml of filtered, aerated tap-water. The oxygen content of the water in the present experiments ranged between 3·8–4·5 ml/1 and these values are within the limits indicated by Tabibzadeh[4]. The experimental food organisms, which consisted of 25 live 4th instar larvae of *Culex fatigans* (bred in our laboratory), were then introduced into each of the aquaria without disturbing the test fish. The prey was exposed to predation of *G. affinis* for a period of 10 hours a day. Since the experiments were repeated on 3 successive days, the performance of 5 individuals yielded a total of 15 observations in each series.

Considering the total number of larvae consumed as 100 (irrespective of physiological state of the fish), as much as 25 to 50% of the larvae were predated by *Gambusia affinis* during the first 2 hours. In the subsequent successive 2-hour periods only 10 to 20% of the larvae were predated. This observation confirms those reported by Beukema[5] for *Gasterosteus aculeatus* and Pandian and Reddy[2] for *Gambusia affinis,* that there was an intensive feeding during the first 2 hours whereas in the following 2 hours only few prey organisms were predated.

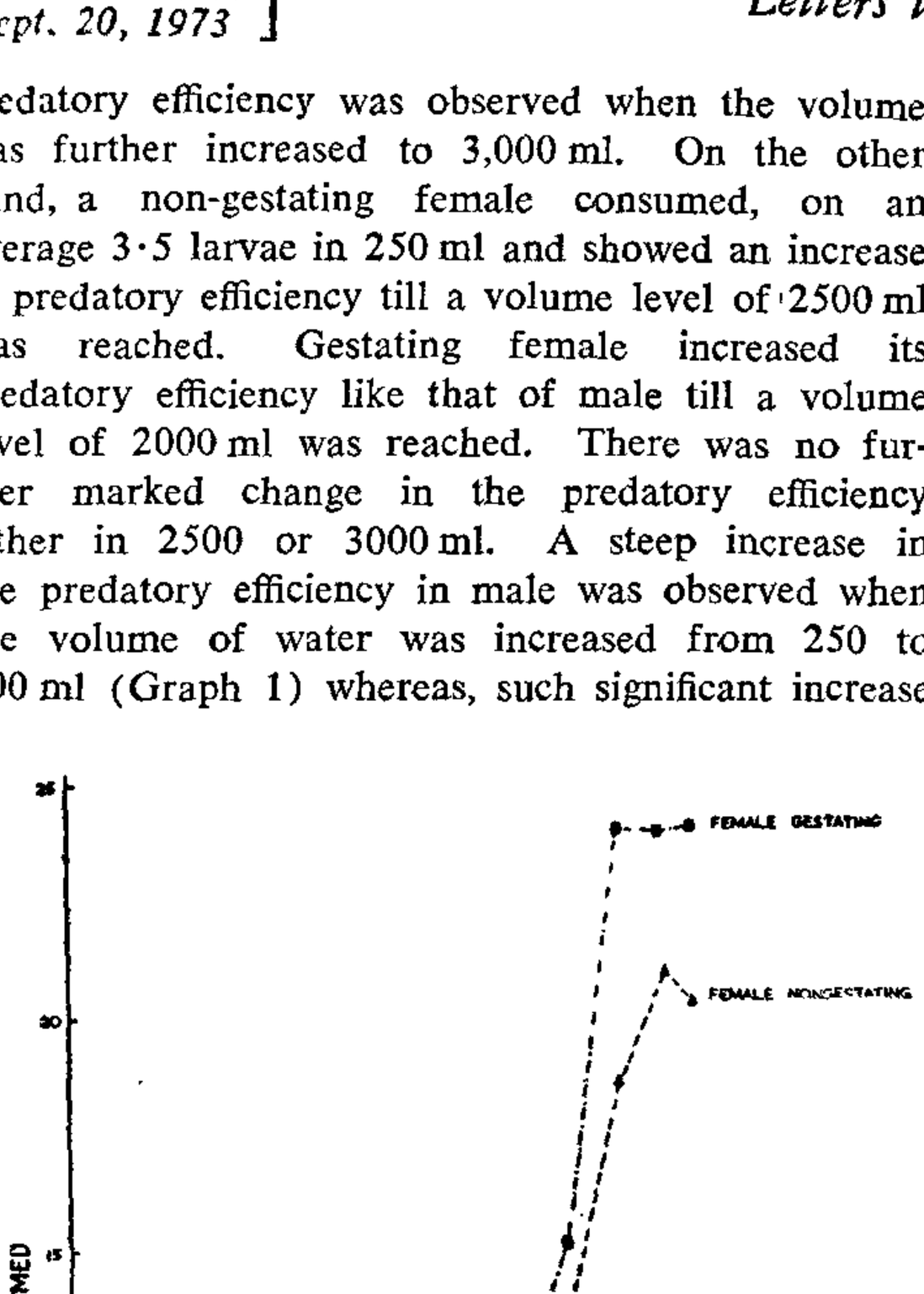
Table I represents the mean number of mosquito larvae consumed by *Gambusia affinis* when exposed to different volumes of water. A male on an average consumed 3·7 larvae in 250 ml and its predatory efficiency increased till a volume level of 2500 ml was reached. No marked change in

TABLE I

Effect of volume of water on the predatory efficiency (number of 4th instar Culex fatigans *larvae consumed in 10 hours period) of* Gambusia affinis. *Each value represents the mean of 15 experiments*

Sex and Physiological state	250 ml	500 ml	750 ml	1000 ml	1500 ml	2000 ml	2500 ml	3000 ml
Male	3·7±2·1	7·0±6·1	8·0±2·1	8·5±2·1	8·4±3·2	10·1±2·3	10·5±2·3	10·3±4·7
Female, non-gestating	3·5±1·1	6·1±1·9	6·5±1·7	7·8±2·9	13·7±4·6	18·6±3·9	20·9±3·9	20·3±4·8
Female, gestating	2·3±1·7	4·3±1·9	5·5±2·3	10·1±3·3	15·2±4·9	24·1±1·5	24·0±1·5	24·1±1·8

predatory efficiency was observed when the volume was further increased to 3,000 ml. On the other hand, a non-gestating female consumed, on an average 3·5 larvae in 250 ml and showed an increase in predatory efficiency till a volume level of 2500 ml was reached. Gestating female increased its predatory efficiency like that of male till a volume level of 2000 ml was reached. There was no further marked change in the predatory efficiency either in 2500 or 3000 ml. A steep increase in the predatory efficiency in male was observed when the volume of water was increased from 250 to 500 ml (Graph 1) whereas, such significant increase



GRAPH 1. Effect of volume of water on the predatory efficiency (number of 4th instar larvae consumed in 10 hr period) of *Gambusia affinis*.

in predatory efficiency in non-gestating female was observed only when the volume was increased from 1000 to 1500 ml. Gestating female showed such a change when the volume was increased from 750 to 1000 ml. Average live body weights of males and non-gestating females used in the present experiment was 132·4 mg. It was observed in the present experiment that the male *G. affinis* displayed higher feeding rate till a volume level of 1000 ml was reached and only beyond this volume level, the female showed increase in its feeding rate. Katre[6] observed that the male *G. affinis* had a lower feeding rate when compared to females of similar body size. The total volume of water seems to determine the predatory efficiency of *G. affinis*. Further experimental work on the behaviour of prey-predator system is in progress.

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THE NATURE OF THE LYMPHOID TISSUE IN THE CAECUM OF THE DOMESTIC FOWL

IT is recognized that in the chicken there are two types of lymphoid tissue, the bursa-dependent one, responsible for humoral immunity and the thymus-dependent one, related to cellular immunity[1]. It is assumed that a similar dualism in lymphoid tissue exists in mammals too[2]. Cooper *et al.*[3,4] have shown by surgical bursectomy and/or thymectomy followed by irradiation that the chicken spleen consists of both bursa-dependent lymphoid follicles and plasma cells and thymus-dependent diffuse lymphocytes.

In a study of the morphology of the caecum of birds[5], it was found that as a rule, the intestinal caecum in the gallinaceous birds is well developed and consists of a capacious cavitied region in the middle with a long narrow region at the base and a blind knob at the terminus. In the domestic fowl which is derived from the wild jungle fowl, lymphoid tissue occurs at the terminal end as well as at the base of the caecum ; the latter has been described and termed "caecal tonsils" by Hill[6]. However, the nature of the lymphoid tissue met with in the caeca of the fowl has not been studied in detail so far. This paper deals with the attempts made to recognize histologically the two types of lymphoid tissue present in the caecum of the domestic fowl.

The caecum of the chick embryos as well as of chicks of different age groups was sectioned and