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#### A NEW SPECIES OF *KATAGNYMENE*

DURING the studies on the freshwater algae of Marathwada region of the Maharashtra State, the authors came across a species of *Katagnymene* differing in many respects from the three known species of the genus<sup>1,2</sup> and therefore described here as new.

*Katagnymene maharashtrensis* sp. nov. (Fig. 1)

Trichomes long, usually straight, not constricted at the cross walls; cells much shorter than broad, 1/5–1/8 times as long as broad, 9–10.5  $\mu$  broad, 1.3–2  $\mu$  long; gelatinous sheath diffuent, hyaline, nonstratified, 28–35  $\mu$  broad; end cell rounded without cap or calyptra.

In a pond, Shahapur (19–10–1976).

Collected by P. V. Ashtekar and kept in his collection No. 1103.

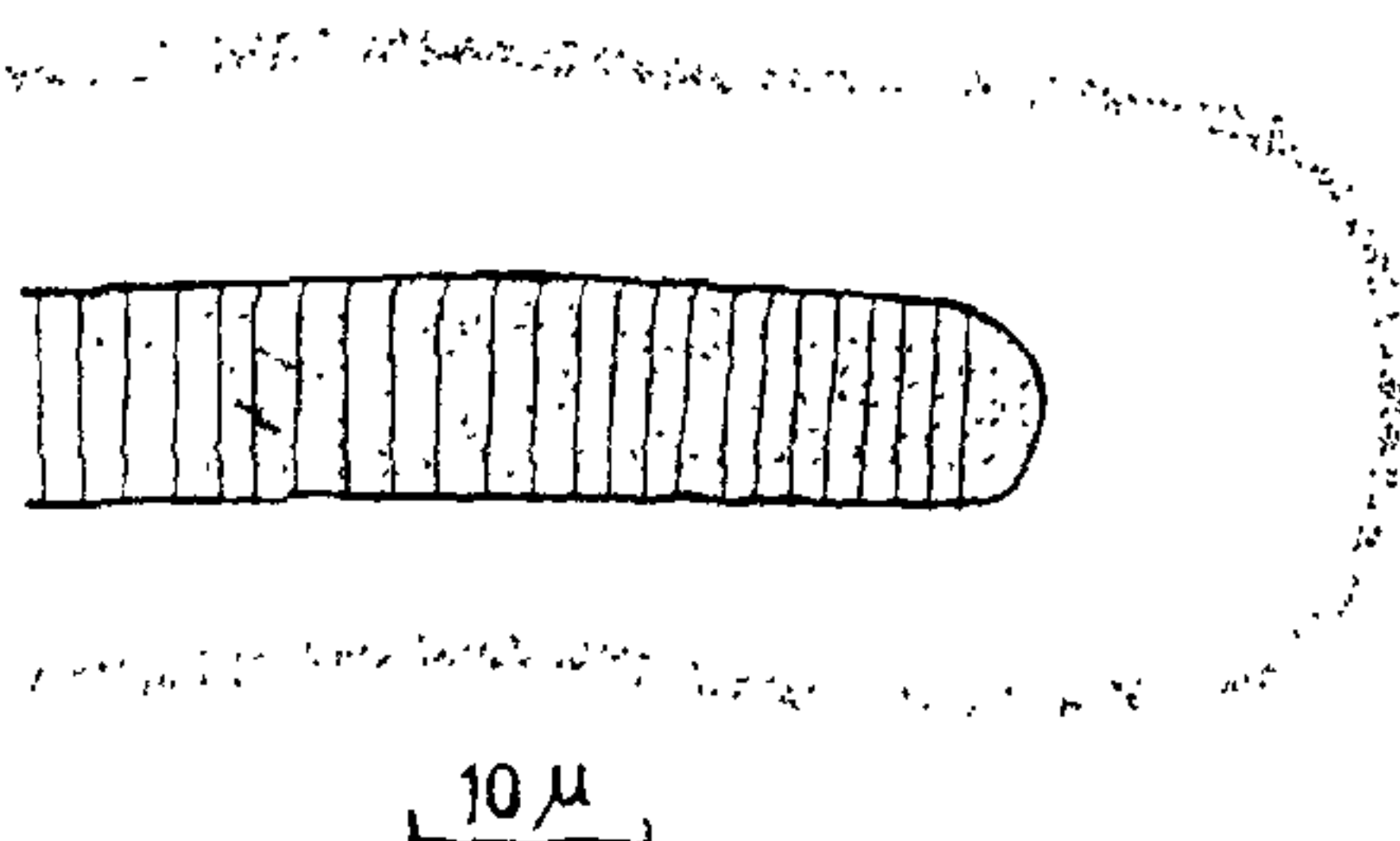


FIG. 1. *Katagnymene maharashtrensis* sp. nov.

Trichomata longa, vulgo recta, non-constricta ad septa transversa; cellulae multo breviores quam latae, 1/5–1/8 longiores quam latae, 9–10.5  $\mu$  latae, 1.3–2  $\mu$  longae; vagina gelatinosa, diffuens, hyalina, non-stratificata, 28–35  $\mu$  lata; cellulae terminalis rotundata, non-capitata, absque calyptra.

In lacu, Shahapur (19–10–1976).

Typus lectus a P. V. Ashtekar et positus in eiusdem collectione subnumero 1103.

So far only two species of *Katagnymene* have been recorded from the Indian Ocean<sup>1</sup> and this is the first record of the fresh water species from India and the second in the World<sup>2</sup>.

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#### EFFECT OF SEASONAL VARIATIONS, STARVATION AND COLD ACCLIMATION ON SERUM CHOLINESTERASE ACTIVITY OF COMMON FROG *RANA TIGRINA*

ALTHOUGH considerable amount of work has been done on this enzyme in homeotherms<sup>1,2</sup>, very little information is available on poikilotherms. Since the information pertaining to the influence of seasonal variations on this enzyme particularly in amphibians is meagre, an attempt is made to study the effect of seasonal changes, cold acclimation and starvation on the level of serum cholinesterase (ChE) in the common Indian frog *Rana tigrina*.

The methods of selection, feeding and maintenance of experimental animals were the same as reported earlier<sup>3</sup>. Cholinesterase (ChE) activity was determined as per Sigma Technical Bulletin (No. 420) which is based on the method of Rappaport *et al.*<sup>4</sup>. The results are expressed in Rappaport Units/ml serum. One unit is equivalent to the hydrolysis of 1  $\mu$  Mole of acetylcholine in 30 min at 25° C. As reported earlier<sup>5</sup> the effect of cold acclimation was determined by keeping the frogs at 13° C, when the atmospheric temperature was 40° C.

As shown in Fig. 1, serum ChE increases from April with a peak in September. The lowest values are recorded in January. Cold acclimation of frogs upto 144 hrs is not observed to influence ChE activity significantly (0.5%). The starvation of the animals (Table I) upto 30 days caused a gradual decrease in ChE activity from 10th day onwards and a direct relationship is observed between the period of star-

vation and the enzyme activity. This trend remained the same in all the four months, December, January, June and July in which the effect of starvation is studied.

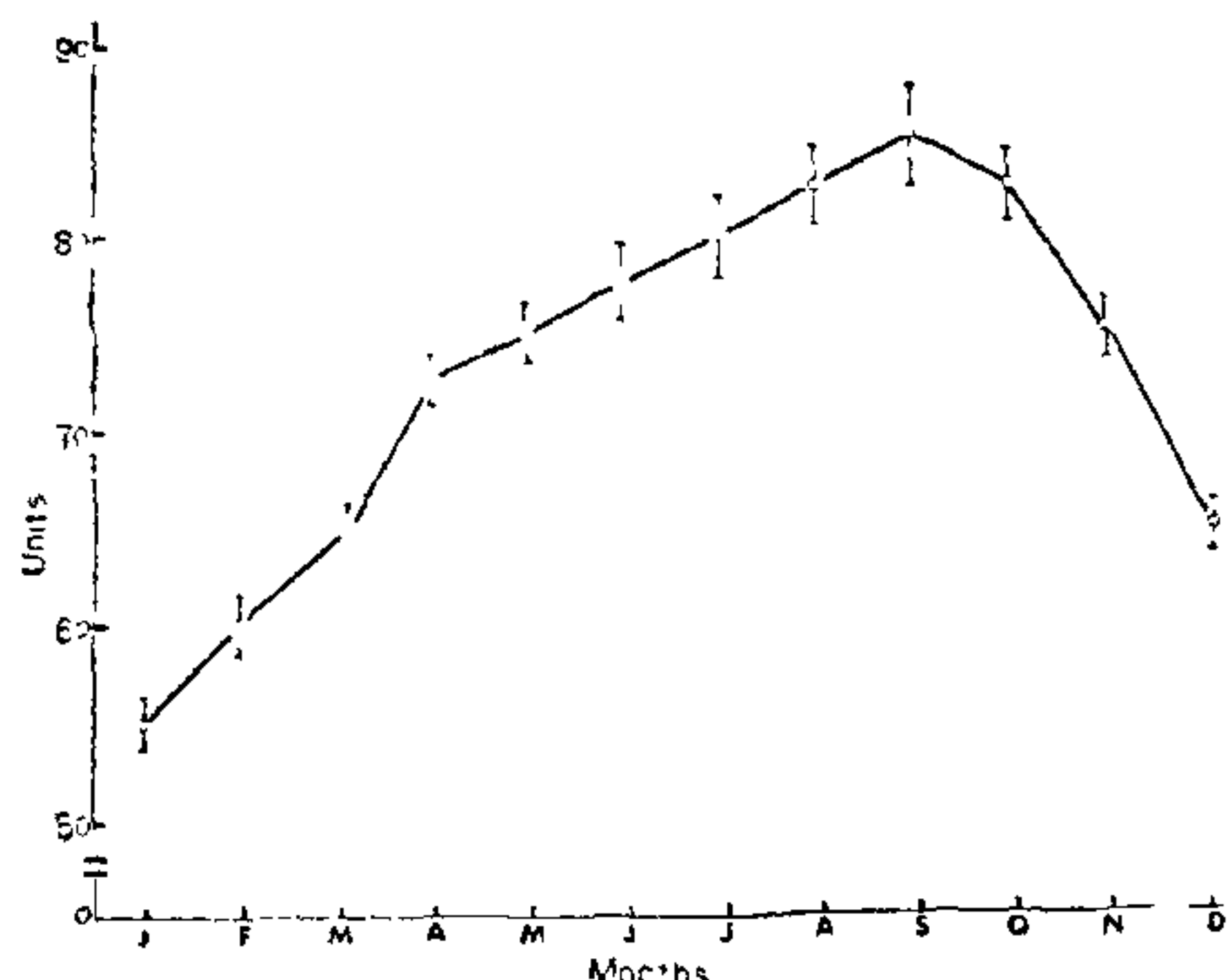


FIG. 1. Monthly average serum cholinesterase activity  $\pm$  S.E.M. (—○—) showing seasonal changes in *Rana tigrina*. The points in the figure are means of 16 observations.

In general ChE activity (55.0–85.0; Mean  $72.8 \pm 1.19$ ) observed in *R. tigrina* compares favourably with normal values reported for human<sup>6</sup>. Serum ChE activity in the present investigations has been observed to be related with season and spawning habits of the frog.

TABLE I

Effect of starvation on serum cholinesterase activity (Values expressed in Rappaport Units/ml serum are mean  $\pm$  S.E.M. of 8 observations)

Period of starvation (Days)	December-January (Winter animals)	June-July (Summer animals)
Control	$60 \pm 1.0$	$80 \pm 1.6$
10	$55 \pm 0.9$	$75 \pm 1.2$
15	$52 \pm 1.0$	$65 \pm 1.0$
20	$48 \pm 0.7$	$58 \pm 0.9$
25	$45 \pm 0.5$	$49 \pm 0.9$
30	$42 \pm 0.5$	$45 \pm 0.5$

The high serum ChE values in frogs during July to October indicate a relationship with their spawning period. Influence of sex hormone on ChE activity has already been demonstrated in rat<sup>2</sup>. Hence in the present study it appears that the enzyme level is under the control of sex hormone which might be active during this period. The high level of this enzyme may also be indicative of active phase and higher metabolic activities in frogs during this period.

Increased blood cholinesterase activity during summer has been reported in domestic fowl<sup>1</sup>. The present results are in agreement with this report, in that, in frogs also a high value is observed in June as compared to the values recorded in January. This increase may also be related to the activity of the frogs since in human the enzyme level has been reported to increase with vigorous exercise<sup>7</sup>. Temperature alone probably causes a little effect on the enzyme level, since cold acclimation of the frogs has not influenced ChE activity of the serum. Hence the seasonal rhythm of the activity observed seems to be endogenous.

A decrease in serum ChE activity observed in present experiments during starvation may be correlated with the fall in serum protein level reported<sup>8</sup> in the same animal under similar conditions. Similar results were also observed in humans<sup>9</sup> where a decrease in cholinesterase level was caused due to protein deficiency.

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