

But the best growth was obtained in the culture treated with indole-3-acetic acid. Though gibberellic acid was found inducing growth enhancement, the increase in

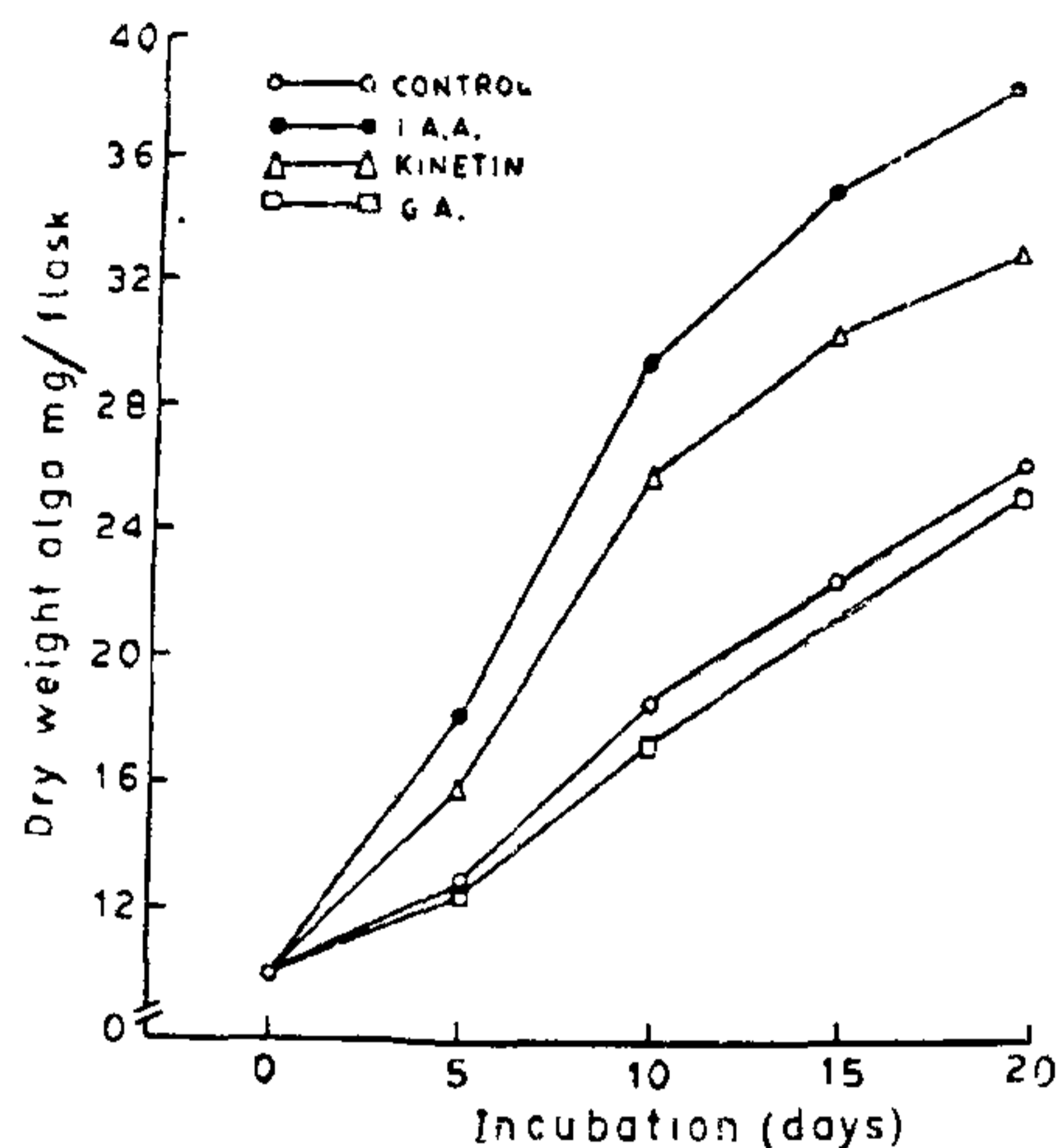


FIG. 1. Growth (Dry weight in mg) of *Westiellopsis prolifica*/Flask treated with Indole-3-acetic acid (I.A.A.), Kinetin and Gibberellic acid (G.A.).

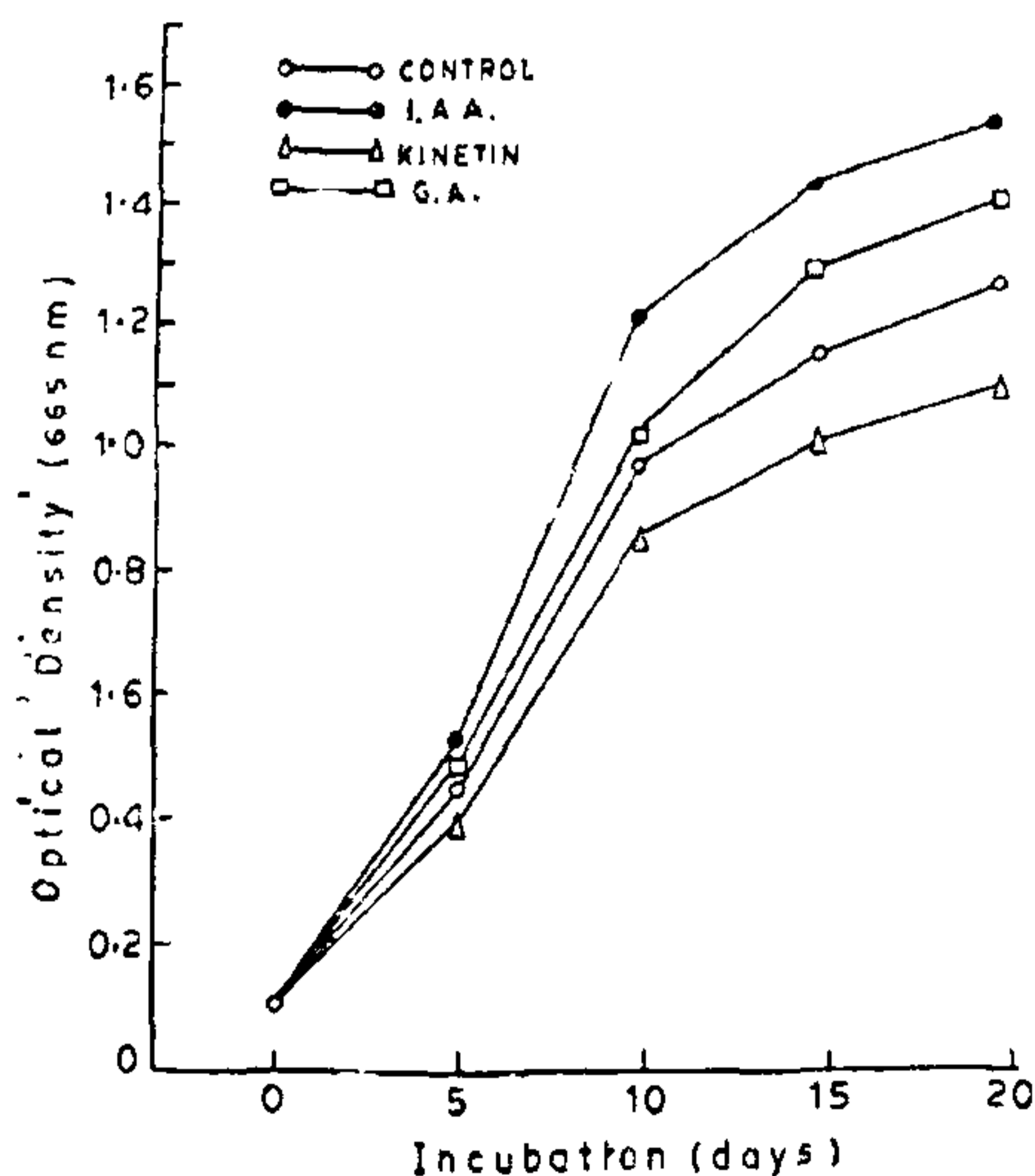


FIG. 2. Chlorophyll content (Optical density of acetone soluble pigments at 665 nm) of *Westiellopsis prolifica*/Flask treated with Indole-3-acetic acid (I.A.A.), Kinetin and Gibberellic acid (G.A.).

growth rate was negligible in comparison to control values.

Effect of these hormones on chlorophyll contents of the algae shows the most interesting finding of the present study (Fig. 2). More or less a similar trend was observed at the chlorophyll levels of the algae treated with indole-3-acetic acid and gibberellic acid. But kinetin, unlike enhancing algal growth, inhibits the production of chlorophyll of *Westiellopsis prolifica*. The chlorophyll content of kinetin treated alga was found to be much less than the control value (Fig. 2). It is evident from this finding that the differential physiological response of the hormones may be due to the ecophysiology of algal growth conditions and hormone specificity of the algae. But it needs further investigation.

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#### THE INFLUENCE OF TEMPERATURE ON OXYGEN CONSUMPTION OF *DAPHNIA CARINATA* KING (CLADOCERA: DAPHNIDAE)

THOUGH a number of investigations have been made on the respiration of cladocerans like *Simocephalus vetulus*,<sup>1</sup> *Daphnia obtusa* Kurtz, *Daphnia longispina* and *Sida cristallina*,<sup>2</sup> *Daphnia magna*<sup>3</sup> and *Daphnia pulex*,<sup>4</sup> same studies at different temperatures have not been done. The changes in metabolism in relation to temperature as reflected by the rate of oxygen consumption in *Daphnia carinata* King have been presented in this paper.

*D. carinata*, adults ranging from 2 to 2.05 mm in length were collected in the month of February from Puliankulam pond near Madurai University Campus and kept at 15°C and 35°C in the incubator for

three days. Winkler bottles of capacity 7 ml were used as respiration chambers following the techniques of Job<sup>5</sup>. The oxygen consumption was measured at different temperatures by micro Winkler method.

The rate of oxygen consumption of *D. carinata* in the acute transfer of animals kept at 15° C to 35° C shows a 72% increase in the rate over that at 15° C. On the other hand the reciprocal acute transfer of animals kept at 35° C to 15° C shows a 91% decrease in the oxygen uptake rate over that at 35° C (Table I). The  $Q_{10}$  between 15° C to 28° C and 28° C to 35° C were found out to be 1.2 and 1.6 respectively.

TABLE I

The rate of oxygen consumption in *D. carinata* at different acclimated and test temperature

Temperature		Oxygen consumption mg/hr./mg body wt.
Acclimated °C.	Test °C.	
15	15	3.25
35	15	0.45
35	35	4.60
15	35	5.60

A high to low transfer shows a far greater impact of temperature change upon oxygen consumption than *vice versa*. Similar pattern has been recorded in insects<sup>6,7</sup>.

In biological systems the  $Q_{10}$  decreases with increasing temperature<sup>8</sup>. But the  $Q_{10}$  value of *D. carinata* is anomalous to the above statement. A similar trend has been observed in the millipede *Orthomorpha gracilis*<sup>9</sup>, in *Spirostreptus asthenes*<sup>10</sup> and in the fiddler crabs *Uca pugilator*, *U. pugnax* and *U. rapax*<sup>11</sup>.

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### CHROMOSOMAL STUDIES OF TWO SPECIES OF *ACONITUM*

THE genus *Aconitum* having 24 species endemic to India<sup>1</sup> has been placed either in Helleboreae<sup>2,3</sup> or Helleboraceae<sup>4</sup>.

This herbaceous genus has got immense therapeutic value for its tuberous roots yielding the drug aconite. The present communication reports the detailed karyotype analysis of two species of *Aconitum* viz., *Aconitum bisma* (Ham.) Rap. (*A. palmatum* D. Don) and *Aconitum novoluridum* Munz. (= *Aconitum luridum*) Hook. f. et Thoms., obtained from a very high altitude (10000 ft.) of the Eastern Himalayas.

Pretreatment of healthy root-tips in saturated solution of paradichlorobenzene for 2½ hours at 10°-12° C followed by fixation in propionic-alcohol (1:2) for one hour and the usual propionic-orcein schedule gave well clarified metaphase plates. The chromosomal complement of the species studied were categorised into the following types given in Table I.

The chromosome study of the two species showed that the number of shorter chromosomes in the complement is high in comparison to the longer ones and the most remarkable feature of its karyotype is the abrupt difference in size between the longer and shorter chromosomes.

In this genus on the basis of previous reports, the basic chromosome number is 8 and the number reported in these species is either 16 or 48<sup>5</sup>. The report of  $2n = 16$  chromosomes in *Aconitum novoluridum* is in conformity with the previous reports as well<sup>6</sup>. On the other hand  $2n = 30$  chromosomes in *Aconitum bisma* is rather new for the species. Previous report showed  $2n = 48$  chromosomes<sup>6</sup>.

As  $2n = 32$  is quite common for this genus and basic set of 8 is the most prevalent, it is likely that  $2n = 30$  chromosomes have originated out of gradual elimination of a single chromosome from an intermediate complement with  $2n = 16$ . The pair of