they are known to degrade the pectic and cellulosic substances of the cell wall[1].

For making enzymes preparations, 5·0 gm of above rotten portion was ground thoroughly in 15 ml sterilized distilled water and 15 ml of 0·5 N NaCl solution. The resulting extract was squeezed through 3–4 layers of muslin cloth and finally centrifuged at 4,000 rpm for 20 minutes. The clear supernatant was used as enzyme sample. Similar enzyme samples were also prepared from "control fruits". The activity of these enzymes was assayed by measuring the loss in viscosity using Oswald-Fanske Viscometer. The viscosity of different reaction mixtures was measured immediately (Vo) and then after 120 minutes (Vt). The viscosity of distilled water was also measured (Vw). Boiled samples of crude enzyme extract was used as control. These estimations were made at 28° C in a water-bath. The percentage of enzyme activity was calculated by the formula given below:

$$\frac{Vo - Vt}{Vo - Vw} \times 100.$$

The composition of reaction mixtures used for different enzymes was as follows: PMG [Pectin 5·0 ml (1% solution, pH 5·5), enzyme sample 2·0 ml, 1·5 ml phosphate citrate buffer (pH 5·5) and 1 ml distilled water]; PG [5 ml Sodium polypectate (1% solution, pH 4·5), 2 ml enzyme sample, 1·5 ml phosphate citrate buffer (pH 4·5) and 1 ml distilled water]; and Cx [Carboxymethyl cellulose (1% solution, pH 5·5) 2 ml enzyme sample, 1·5 ml phosphate citrate buffer (pH 5·5) and 1 ml distilled water].

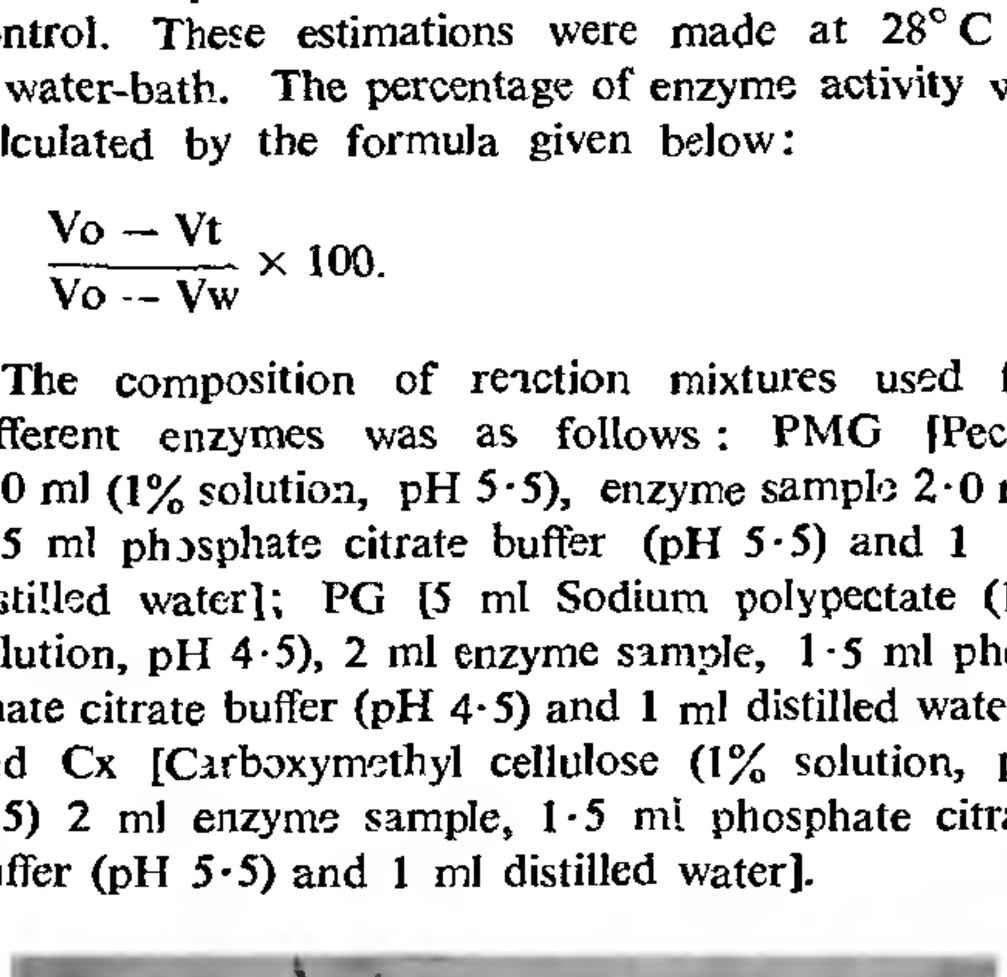

FIG. 1

The studies demonstrated the production of PMG, PG and Cx enzymes in the diseased tissues of Bhel fruits. Since these enzymes were not present in fruits used as control, it is apparent that these were produced by the pathogen, *Fusarium solani*. Among the pectolytic enzymes, PMG was most active (86·9%) whereas PG was moderately active (50%). This shows that PMG was the main enzyme responsible for degradation of pectic substances present in the form of incrusting and sheathing substances of plant cell wall including the middle lamella. These enzymes therefore facilitated the entry of the pathogen inside the fruit tissue. The *in vivo* production of cellulase with an activity of 57·5% indicates that the pathogen is fairly capable of killing the cells and hence the rotting.

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## EFFECT OF HORMONES ON THE GROWTH AND CHLOROPHYLL CONTENT OF *WESTIELLOPSIS PROLIFICA* JANET

THE effect of Indole-3-acetic acid on the growth of blue-green algae has been reported previously[1–3]. From ecophysiological consideration the effect of indole-3-acetic acid on various physiological aspects of micro-organisms is important as the environment contains a considerable amount of excreted organic compounds and growth regulators[4,5]. The present communication describes the effect of kinetin, indole-3-acetic acid (I.A.A.) and gibberelic acid (G.A.) on the growth and chlorophyll content of *Westiellopsis prolifica* Janet, a blue-green alga.

Pure strain of the alga was grown in nitrogen-free Allen and Arnon's medium (1955) with the micronutrients modified by Fogg (1949). The cultures were maintained following the methods adopted earlier[6,7] and were grown at 24 ± 2° C in a culture room under continuous light. The hormones kinetin, indole-3-acetic acid and gibberelic acid were added to the culture media to obtain the concentration 1 μM each. Cultures were harvested at 5 day intervals upto 20 days of incubation. Growth of the algal sample was determined by dry weight method[8]. Chlorophyll contents were estimated colorimetrically after extracting in 80% acetone.

An analysis of the data clearly indicates the stimulating action of all the three hormones for algal growth in terms of dry weight (Fig. 1). The alga cultured with exogenously applied kinetin and indole-3-acetic acid exhibited significant increase in their growth rates over the controls (cultured without hormones).

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 growth rate was negligible in comparison to control values.

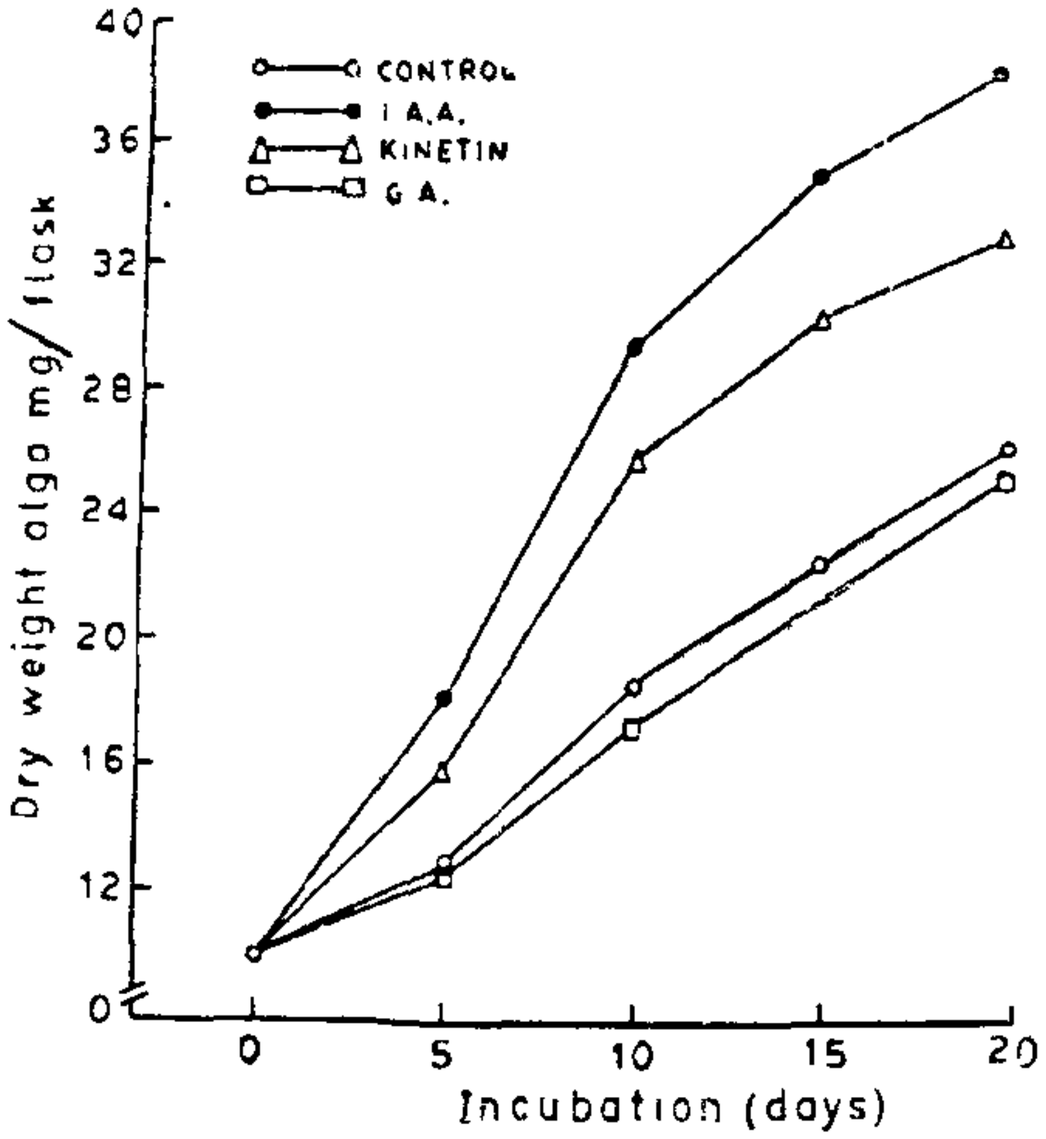


FIG. 1. Growth (Dry weight in mg) of *Westiellopsis prolifica*/Flask treated with Indole-3-acetic acid (I.A.A.), Kinetin and Gibberellic acid (G.A.).

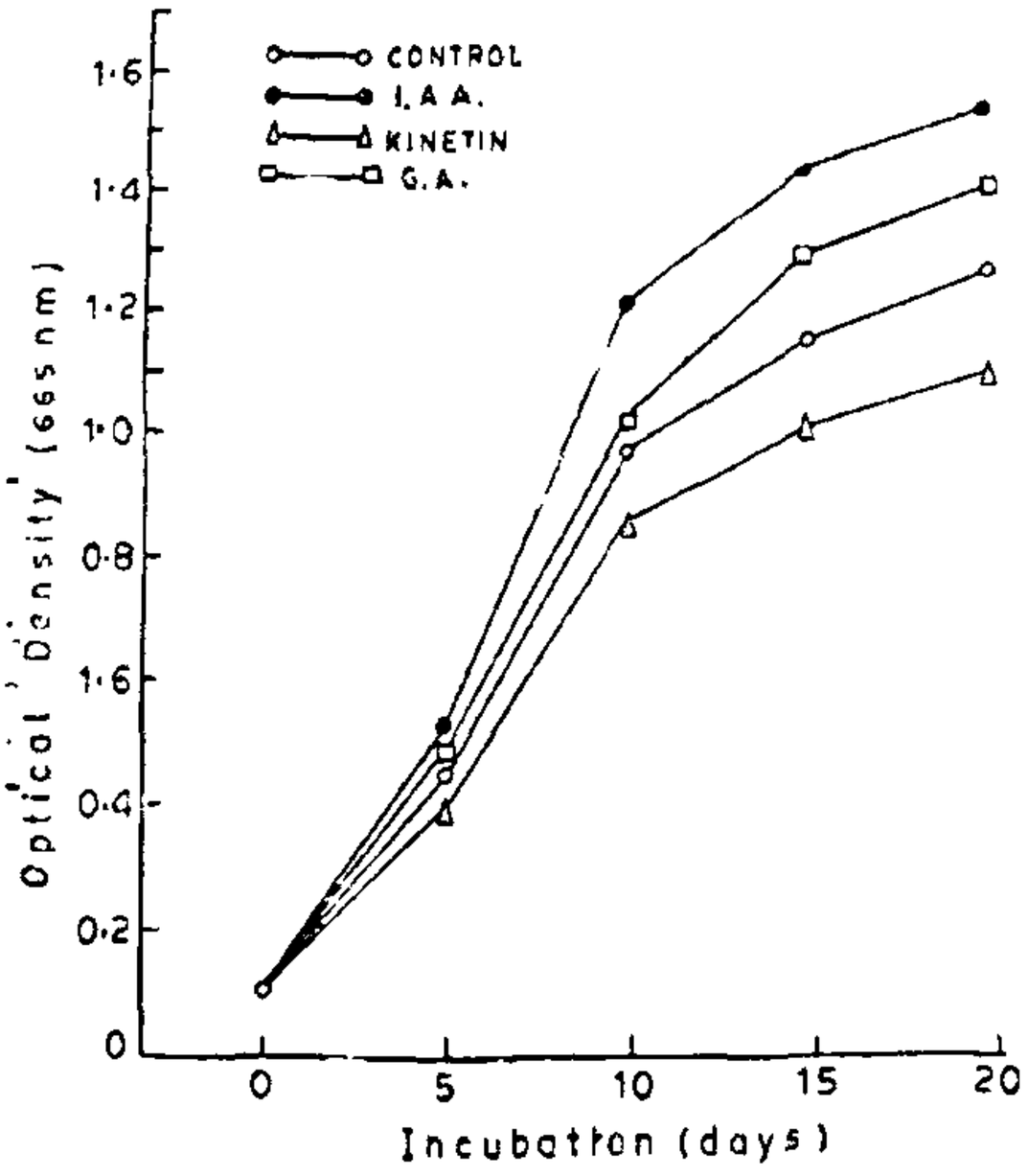


FIG. 2. Chlorophyll content (Optical density of acetone soluble pigments at 665 nm) of *Westiellopsis prolifica*/Flask treated with Indole-3-acetic acid (I.A.A.), Kinetin and Gibberellic acid (G.A.).

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*,[1] *Daphnia obtusa* Kurz, *Daphnia longispina* and *Sida cristallina*,[2] *Daphnia magna*[3] and *Daphnia pulex*[4], 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