mortality of the burrowing crustaceans *Upogebia littoralis* on the shore due to a severe gale in Black Sea. Ramamoorthi *et al.*[4] observed mass mortality of *Lingula unatina* in Porto Novo waters which was attributed to low salinity and cyclonic storm. Furthermore, the appearance of a higher salinity during this period is also worthy of mention here. This could be due to the South-West Monsoon drift (surface current) of April to October which flows eastward south of India with its branches flowing clockwise following the coast line in the Arabian Sea and Bay of Bengal as pointed out by Santhanam and Krishnamurthy[5] and Fairbridge *et al.*[6]. It seems likely that higher salinity and cyclonic storm which could have churned the bottom and uprooted the clams from their burrows could be the possible reasons for the mass mortality of *S. truncatus*.

I am thankful to Professors A. Subbiah and J. A. Daniel of V.O.C. College, Tuticorin, for their constant encouragement. I am also indebted to the Deputy Conservator, Meteorological Department, Port of New Tuticorin, for the information on wind speed.

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OVICIDAL ACTIVITY OF *ECLIPTA ALBA* HASSK. (COMPOSITAE)

INSECTICIDES having ovicidal properties have the added advantage in controlling the pest. Ovicidal properties of some plant products have been studied[1, 2]. Prasad and Rao[3] described nematicidal properties of *Eclipta alba*, a common weed in rice fields. The results of the experiments conducted on the ovicidal activity of water extract of this plant against the eggs of *Sitotroga cerealella* Oliv. are reported here.

Extracts were prepared from 50 g of freshly collected plant root and shoot portions of *E. alba* in 100 ml of distilled water. The filtrate fraction of the extract was used as absolute concentration for treatments. Five ml of 10, 25, 50 and 100 per cent extract solutions and distilled water (control) in three replications were sprayed on Whatman filter papers No 4 kept in petri dishes under Potter's tower at 5 psi. Fifty eggs (16 hr old) were placed on treated filter papers in the petri dishes and were allowed for 8 days for hatching under laboratory conditions.

The number of unhatched (dead) eggs was counted after the incubation period and the mortality percentage was calculated and corrected using Abbott's formula. The data revealed that extract at absolute concentration was highly toxic to the eggs recording a mortality of 94·2%. Mortality percentage decreased with the decreasing concentration and the lowest mortality of 26·2% was observed at 10% concentration. The remaining two concentrations, *viz.*, 25 and 50% recorded 51·0 and 75·2% mortality respectively. The results, thus, reveal that the water extract of *Eclipta alba* has ovicidal properties for the eggs of *Sitotroga cerealella* in addition to the nematicidal properties described by Prasad and Rao[3]. This is the first report of the ovicidal property of *E. alba*.

The authors are thankful to Dr. H. K. Pande for providing facilities.

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A HISTOCHEMICAL STUDY ON THE CONTROL OF LIPID METABOLISM IN THE FAT BODY OF *POECILOCERUS PICTUS* (ORTHOPTERA, ACRIDIDAE)

THERE is conflicting evidence on the participation of gonads in the regulation of fat body metabolism in insects. During the growth of an insect, the fat body also grows, accumulating deposits of lipid and glycogen[1-3], the developing gonads gradually taking up these substances from the fat body through haemolymph. This hypothesis is also supported by Hill[4-5], Highnam *et al.*[6], etc. The evidence of an overian hormone producing an inhibitory feedback to the corpus allutum to control the mobilisation of metabolites from the fat body has been reported by Nayer[7], Doane[8], Engelmann[9], Adams[10] and Shrivastava[11], etc. Alternately a hormone from the corpus allatum directly

controlling the release of metabolites from the fat body[12–14] has also been reported.

The present work is an attempt to explore how lipid metabolism is regulated in the fat body of the grasshopper *Poecilocerus pictus* and whether the testes also have some effect like the ovaries. The histochemical method applied for the study of lipids is that of Wigglesworth[15] and for neuroendocrine complex of Ewen[16].

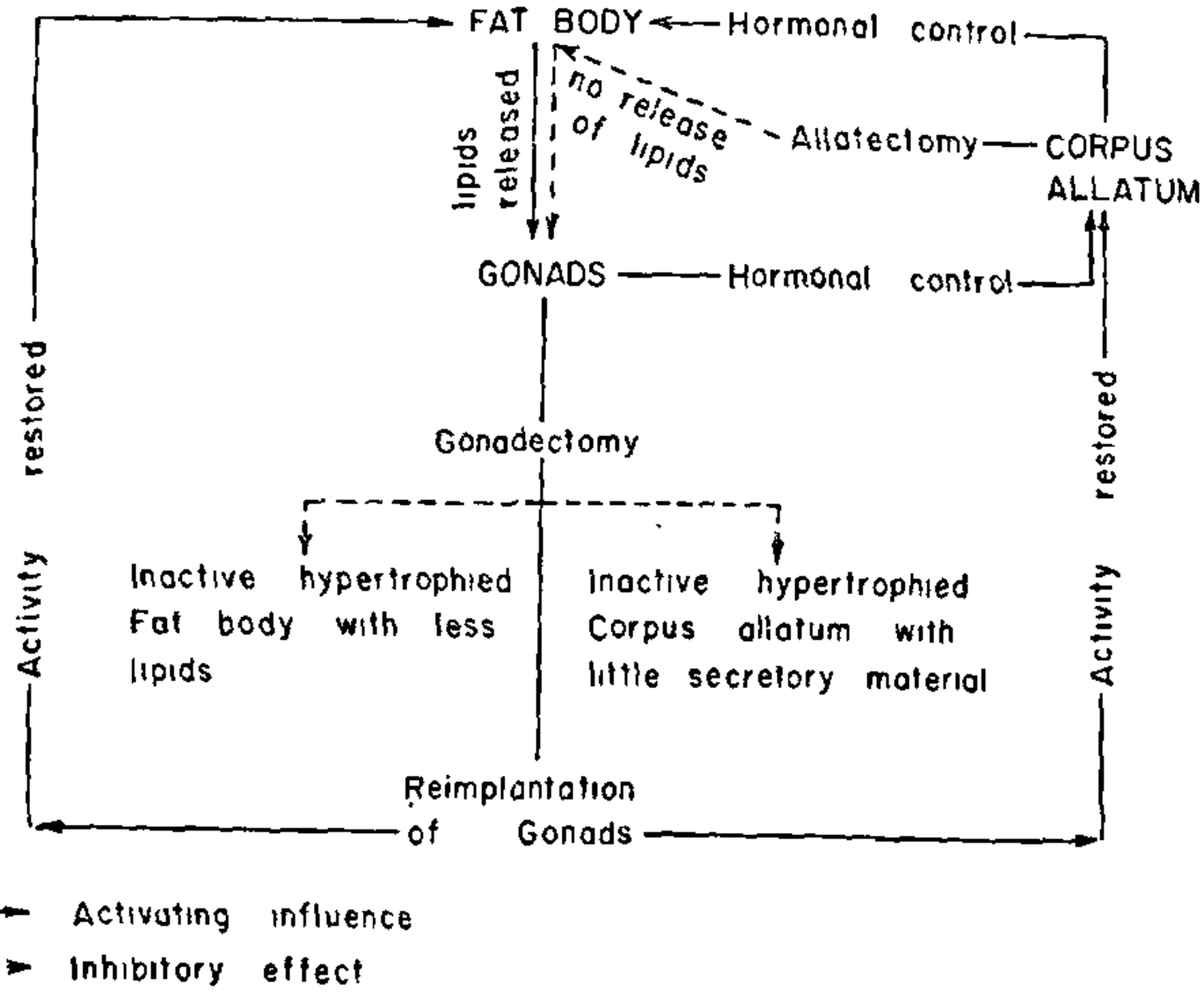

FIG. 1. A hypothetical diagram showing the possible feedback mechanism existing between fat body, gonads and corpus allatum of *P. pictus* controlling lipid metabolism.

The fat body of female *P. pictus* is characterised by larger amount of lipids than that of a male as has been confirmed quantitatively[17]. In normal females and males whose neurosecretory cells, corpora cardiaca and corpora allata are active and transporting, the lipids are synthesised and stored in the fat body during newly emerged stage to about 28 days of emergence. Simultaneously this metabolite is sequestered by the growing ovaries and testes. During 3–7 days of emergence the neurosecretory material passes from the neurosecretory cells to the corpora allata which are quite active upto 20 days as also mentioned by Saini[18]. The lipid deposition in the fat cells decreases considerably at the time of egg-laying in the female when the corpus allatum also decreases in size and is less active.

In ovariectomised females and castrated males, the fat cells hypertrophy and the intensity of the lipid deposition is less as compared to the fat body of normal *P. pictus*. This has also been observed in *Calliphora*[19]; *Drosophila*[8,20,21] and *Dysdercus*[11]. The removal of gonads also causes hypertrophy of the corpora allata[22] which is also supported by the work of Vogt[23]. Thomsen and Hamburger[19] and Doane[8]. Thomsen[24] and Strangways-Dixon[25] found an increase in corpus allatum volume after castration in female *Calliphora*. Many other workers obtained similar results as referred earlier[22] but Shrivastava[11] found a considerable decrease in CA area in ovariectomised *Dysdercus*. In *P. pictus* the hypertrophied corpora allata of individuals, whose gonads have been removed, are dull and inactive.

Observations in some allatectomised individuals revealed in each case that the fat body accumulated lipids, *i.e.*, the lipids are not released from the fat body of such individuals. Thus in the absence of gonads the corpora allata become inactive and the fat body hypertrophies, there being no need of release of lipids contained in it. On the other hand, in the absence of corpora allata, the fat body accumulates lipids because these are not sequestered by the gonads. This also happens in male *S. gregaria*; and Odhiambo[26] has suggested that this is due to the fact that a corpus allatum hormone is involved in the regulation of lipid metabolism. Elliott and Gillott[27] have shown that oocytes of allatectomised females of *Melanoplus* fail to deposit yolk and the wet weight of the fat body increases. Observations on *P. pictus* suggest that the increase may be due to an accumulation of lipids in the fat body. The same has also been suggested for *S. gregaria* by Hill and Izatt[28].

Some castrated individuals were implanted with ovaries or testes, as the case may be, and it was observed that the activity of corpora allata as well as the fat body was restored after about 3 days of the

operation. An increase in CA area to a normal, after reimplantation of ovary has also been reported[11].

Thus it is concluded that ovaries definitely control the activity of the corpus allatum which in turn regulates the metabolism of lipids in the fat body of *P. pictus*. Testes in males of this grasshopper have almost the same effect as ovaries in females though the rate of metabolism is slow in them. This may be due to the fact that testes require less lipids for the development than do the ovaries.

I am grateful to Prof. R. S. Saini for his valuable advice and to Dr. Y. N. Sahai for his keen interest and constant encouragement throughout this study.

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August 17, 1979.

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THE EFFECT OF X-IRRADIATION ON CHOLESTEROL CONTENT OF GUINEA PIG LIVER, ADRENAL AND TESTIS

THE accumulation of lipid droplets in the cytoplasm of different cells, such as hepatocytes, myocardiocytes and adrenal cells in many disease states and in different experimental conditions has been reported[1]. When related to the action of noxious agents, the accumulation of lipd droplets is referred as "fatty change"[1]. The interrelationship between the lipids and carbohydrates in the irradiated tissues is of particular interest. The increased glycogen content in X-irradiated guinea pig tissues is reported[2]. Since cholesterol alterations might reflect metabolic changes which occur following irradiation, it was thought desirable to undertake a biochemical study of the cholesterol content in normal and X-irradiated guinea pig tissues.

Normal adult male guinea pigs (*Cavia porcellus* L.) weighing 350–400 g were used in the experiments. They were maintained in temperature conditioned laboratory on standard feeds (Hindustan Lever Ltd). Since the irradiation almost eliminates feeding activity, the animals were starved for 22–24 hr before being killed. The animals under light ether anaesthesia were X-irradiated between 11 A.M. to 1 P.M. in the thoracic region by copper K alpha lines (Phillips model). The skin target distance was 20 cm, at 40 kV and 20 mA. The dosage employed was 24 R/sec. and measured with a Victoreen dosemeter. The total dose was 240 R X-irradiation. The method of Pearson *et al.*[3] was used for the estimation of cholesterol. Tne concentration of cholesterol was estimated in liver, adrenal and testis of control and X-irradiated (24, 48 and 72 hrs) guinea pigs and the values were expressed in mg/gm fresh weight of the tissue.

The results are presented in Table I. A minimum of six replicates were done for each tissue and treatment. Each group consisted of 6 animals. The data was statistically analysed and represented as ± S.E.M.

Liver : In liver, the cholesterol content increased significantly at 24 hrs ($P < \cdot001$) and tapered to normal level at 48 and 72 hrs after irradiation.

Adrenal : In adrenal, after initial reduction, the cholesterol content reached normal values by 48 hrs and again decreased as much as by 30% at 72 hrs of post-irradiation.

Testis : In testis the cholesterol content showed reduction at 24 hrs but the concentration gradually