duction of rice stem borers is also intimately controlled by the environmental temperature as proposed in some insects (*cf.* ASAHINA, 1969). However, at present it remains to be resolved what relationship between endocrinological and environmental stimuli combines to regulate glycerol concentration in haemolymph of rice stem borers.

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Effect of Thiourea on DNA in the
Ovariole Components of *Chrysomya*
megacephala (FABRICIUS)
(Diptera : Calliphoridae)

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The effect of thiourea on the number and hatching rate of the laid eggs in *Chrysomya megacephala* has been studied by DEEPAK and CHAUDHRY (1979), and it has been established that a minimum concentration of 0.37% of thiourea brings about sterility in the female *Chrysomya megacephala* which on being mated to normal male produce only non-viable eggs. The study of biochemical changes after the application of chemosterilants on various insects has been made by some workers, mainly on the nucleic acids. KILGORE and PAINTER (1964), PAINTER and KILGORE (1967), GADALLAH et al. (1970) and AL-ADIL et al. (1972) have recorded inhibition of DNA synthesis in house fly eggs treated with various alkylating agents. Almost similar results were obtained by KING and SANG (1959) in *Drosophila* ovaries treated with aminopterin. On the contrary Grzelakowska and ZIELINSKA (1965) found a 20%-40% rise of the ovarian DNA after application of aminopterin in *Acantholyda nemoralis*. REZABOVA (1968) have also noticed that after administering 3 different

groups of chemosterilants to adult house flies there is an increase in nucleic acid content of the ovaries. However, there is very little literature available on the histochemical changes in the chemosterilized eggs of insects. The object of this paper is to present a brief histochemical description of the effect of thiourea on DNA in the ovariole components of *Chrysomya megacephala*.

Two groups of newly hatched virgin female *Chrysomya megacephala* were obtained from the culture maintained in laboratory between 25-28°C temperature and 80-85 percent relative humidity. For the first 48 hours, one group was fed on a diet of bread soaked with milk containing only 0.37 percent thiourea, for reasons given above, while the other group used as control, was fed on bread soaked with milk only. Thereafter both experimental as well as control flies were maintained on a diet of flesh and sugar solution. Ten flies from each group were then subsequently taken out at random every 24 hr upto the age of 192 hr and their ovaries were fixed in Carnoy's fixative for 24 hr at 4°C. For the histochemical DNA test Feulgen technique (PEARSE, 1968) was adopted.

The ovariole of *Chrysomya megacephala* is polytrophic type which is identified by the presence of a group of nurse cells and an oocyte surrounded by follicle cells. In the control flies the nucleus and cytoplasm of both the follicular epithelial and nurse cells are DNA positive (Fig. 1). However, the intensity of positive reaction to Schiff's reagent of cytoplasm of follicular and nurse cells is comparatively less as compared to their nucleoplasm. In the ovarioles of treated forms though the fol-

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Fig. 1

Fig. 2

Sections of ovaries of 144 hours old adult *Chrysomya megacephala* untreated (Fig. 1) and treated with thiourea (Fig. 2). FC, Follicle epithelial cell; NC, Nurse cells; NCN, Nurse cell nucleus; OC, Oocyte; OCN, Oocyte nucleus.

licular epithelial and nurse cell nuclei give DNA positive reaction, but their cytoplasm shows completely negative reaction to the Schiff's reagent. In this case it is interesting to note that the chromatin material of the nurse cell nucleus generally gets clumped as a dark red coloured mass (Fig. 2).

In control flies the ooplasm and the oocyte nucleus give DNA positive reaction but the colour intensity is more or less like that of nurse cell cytoplasm (Fig. 1). In thiourea treated flies the ooplasm as well as the oocyte nucleus are completely DNA negative to Schiff's reagent (Fig. 2).

Several workers have studied the transportation of DNA in case of normal insects. For instance in coreid bugs Schrader and LEUCHTENBERGER (1952) have reported its transportation from the nurse cell nuclei to the nurse cell cytoplasm. KAUFMANN et al. (1955) have recorded that DNA passes from the nurse cell nuclei to the ooplasm where it breaks and gets distributed uniformly in the ooplasm and serves as reserve DNA building blocks. The transportation of DNA from the nurse cells to the developing oocyte has also been recorded by JALAJA and PRABHU (1976) in case of normal *Dysdercus cingulatus*.

Our findings in case of normal *Chrysomya megacephala* are quite similar to those of the above authors. But in experimental flies the DNA is absent both from nurse cell cytoplasm as well as ooplasm. In the case of experimental *Chrysomya*

megacephala the nuclear DNA of nurse cell gets clumped in a solid mass in the ovary, while as observed by us it does not happen in the ovary of control flies. Thiourea being the only additional factor in the experimental case, it is most probable to conclude that the clumping of DNA takes place due to its reaction and it is due to this clumping that the DNA is not transported into the cytoplasm. While the absence of DNA in the ooplasm of the treated insects may because of the fact that the nurse cell cytoplasm is itself devoid of DNA material and consequently is not able to contribute into the developing oocyte.

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