**Abstract**

Oxydemeton-methyl (Demeton) is a Locally used pesticide against cotton, paddy and vegetable crop pests. Sublethal concentration 1.7 ppm for 48h exposure on the air-breathing fish *Channastriata* for short-term (8h) and long-term (15-30days) period inhibited ovarian maturation, ovarian glycogen concentration and blood glucose level. Both the treatments increased the population of immature and atretic oocytes. A reduction in the number of maturing and matured oocytes is discernible at 15 days exposure. Prominent vacuolization and deformities of oocytes were observed at long term exposures. The cytoplasm exhibited the presence of “inclusion bodies”. The nuclei appeared necrotic. The mean body weight, the mean body length and the GSI decreased at all periods of exposure.

A continuous decrease in the blood glucose level is recorded at all stages and periods of exposure. A tendency to overcome the “pesticide stress” is evident at 30 days treatment. The ovarian glycogen level decreased significantly at all stages of pesticide exposure. At 30 days exposure, a recovery from pesticide stress is obvious. This is clearly reflected from the decreased percentage of the depletion of the ovarian glycogen level.

Since blood glucose and ovarian glycogen deposition are all under hormonal control, the disruption of hypothalamo-pituitary-gonadal axis and its backlash on the reproductive physiology of *Channastriata* warrants further studies.