**Abstract**

The body cells of fish are endowed with various molecular defense mechanisms. Shortterm (15 days) and long -term (30 days) exposure of Sublethal concentration (1.7mg/l) of organophosphorous pesticide, metasystox triggered many defense reactions in the South Indian edible fish, *Channastriata*. The lysozyme activity, plasma immunoglobulin profile, splenic antibody secreting cells and lymphocytes increased significantly (P<0.05). Though the phagocytic activity increased, the number of yeast cells phagocytized decreased in the pesticide-exposed fishes. The respiratory burst activity and migration of kidney granulocytes showed irregular oscillations. RBC, Hb and Ht increased at all times. An initial rise in the blood glucose and lactate fell abruptly at long term exposure. Sodium and Potassium balance was suppressed. It is therefore abundantly clear that the pesticide stress induces several adaptive immunological modulation in *Channastriata*.