



## ***EXPOSURE OF MALE WISTAR RATS TO COMMERCIALY AVAILABLE ETHREL: SHORT TERM, LONG TERM EFFECTS AND RECOVERY***

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Recently, artificial fruit ripening using ethrel (ethephon) has become a major health concern. The present study investigated the effects of ethrel on behavioural, haematological and biochemical parameters on male Wistar rats. Rats (N = 6/group) were exposed to acute doses of ethrel [2000 mg/kg, 1000 mg/kg, 500 mg/kg body weight (BW) or distilled water (DW: control)] and clinical signs were recorded. To study chronic effects, rats (N = 9/group) were treated with 100, 250, 500 mg/kg BW of ethrel or DW for 90 consecutive days. Another two sets of animals (N = 6/group) were orally treated either with 500 mg/kg BW of ethrel or DW for 90 days and were kept for another 28 days without treatment (recovery) to evaluate the reversibility, persistence or delayed occurrence of toxic effects. Food intake and BW changes were recorded weekly. Exploratory behaviour parameters, muscle strength and coordination were determined. Animals were autopsied and biochemical parameters [alanine aminotransferase (ALT) and erythrocyte cholinesterase (EchE)], haematological parameters (erythrocyte count, total and differential leukocyte count, platelet count, hematocrit and haemoglobin) and sperm parameters (concentration, motility and DNA damage) were measured. Acute treatment did not induce BW change, any overt signs of toxicity or mortality up to 14 days. Treatment with ethrel for 90 days did not reveal any toxicity with respect to clinical signs, food intake, and BW gain. Similarly, exploratory behaviour parameters, muscle strength and coordination, haematological and sperm parameters did not change significantly. However, ethrel induced a significant EchE inhibition at doses of 250 mg/kg (by 9.93%), 500 mg/kg (by 5.75%) and 500 mg/kg – recovery (by 14.62%). Further, ALT activity in treated groups (250 mg/kg, 500 mg/kg and 500 mg/kg - recovery) was significantly different from the control. The percentage of relative organ weights did not differ significantly. However, ratio of liver/body weight increased significantly at 500 mg/kg of ethrel. But, there were no apparent pathological changes in the liver. In conclusion, exposure to higher doses of ethrel may lead to liver damage and decrease EchE activity.

**Keywords:** *fruit ripening, ethrel, ALT, erythrocyte cholinesterase*