

3rd International Conference and Exhibition on **Probiotics, Functional & Baby Foods** September 23-25, 2014 Hotel Royal Continental, Naples, Italy

Evaluation of the reproductive toxicity induced by the organophosphate pesticide “dimethoate” in adult male rats

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In recent years, there has been growing concern about toxicity of a number of chemicals, including pesticides, on the male reproductive system. Several studies suggest that, the decay of human semen quality may be related to the occupational or involuntary exposure to pesticides. The current study was designed to evaluate the impact of orally administered dimethoate on fertility and reproductive system in adult male albino rats. Animals received 7, 10.5 or 21 mg/kg body weight dimethoate/day for 90 consecutive days under controlled laboratory conditions. Weight of testes, the main organ of male reproduction & epididymis, semen picture, serum levels of hormones [testosterone, follicle stimulating hormone (FSH), luteinizing hormone (LH) & prolactin], serum acetylcholinesterase (AChE) activity and histopathological changes in the testes were the criteria used to evaluate the reproductive toxicity in dimethoate-treated rats. Gonadal inhibition was reflected in the significant ($p < 0.05$) reduction in the absolute weights of testes & epididymis and distinct histopathological alteration of testis and epididymis. Reduced sperm count was associated with an increase in the number of morphologically abnormal and immotile spermatozoa in treated rats. In addition, dimethoate caused drastic reduction in the testosterone level especially with the highest dose and significant inhibition of AChE activity. Histopathological results also indicated enlargement of interstitial space, inhibition of spermatogenesis and variable degrees of degenerative changes in the seminiferous tubules up to total cellular destruction. It was concluded that administration of dimethoate, by the oral route to adult male rats for 90 days disrupted spermatogenesis and reduced the fertility which could be linked to hormonal imbalance caused by dimethoate interference of reproductive axis.

Biography

Yieldez Bassiouni has her PhD in 1990 in Basic Medical Sciences in Pharmacology, Department of Pharmacology, Faculty of Medicine, and University of Alexandria, Egypt. 1978 Bachelor of Medicine - very good, distinction of honor- University of Alexandria, Egypt. Present Position: Professor of Pharmacology, Department of Pharmacology and Toxicology, College of Pharmacy, King Saud University, Riyadh, KSU and Professor of Pharmacology, Faculty of Medicine, University of Alexandria, Egypt. Supervisor and examiner of Master and PhD Theses in Pharmacology, Faculties of Medicine, Egypt. She has published more than 30 papers in reputed journals.

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