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Changes in Secretory Products and Lipid Profile in the Epididymis and Spermatozoa of Rats Induced by Aluminium Chloride

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Abstract : Environmental exposure to heavy metals is associated with a wide range of toxic effects. It is evident that heavy metals released in the environment affect the reproductive processes and fertility of animals. Toxic metals affect the male and female reproductive system directly or indirectly. Considering the toxic nature of aluminium and also the major role of secretory products and lipids in sperm maturation, the present study was planned to investigate the effect of aluminium chloride on secretory products like glyceryl phosphoryl choline (GPC), sialic acid, carnitine and acetyl carnitine content and also lipid profiles in the epididymis and spermatozoa of adult rats. Aluminium chloride, 50 mg/kg body weight was administered orally daily for 60 days. 24 hours after the last dose the rats were sacrificed and immediately epididymis was dissected out and spermatozoa was isolated. The weight of the epididymis decreased significantly. GPC and sialic acid content was significantly reduced in the epididymis and not much altered in spermatozoa. Carnitine and acetyl carnitine contents were markedly decreased in the spermatozoa as well as in the epididymis. Aluminium chloride administration caused a marked reduction in total lipid, cholesterol, phospholipids and cholesterol content in epididymis and no significant changes in spermatozoa. Several changes take place in the spermatozoa as they pass through the epididymis. These changes are directly related to the acquisition of fertilizing ability of spermatozoa. From the results, it is evident that aluminium chloride has definite influence on secretory products and lipid profiles in the epididymis. This may eventually have an adverse impact on the fertility of the animal.

Keywords : aluminium chloride, rat, carnitine, GPC, sialic acid, epididymis, spermatozoa
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