

SUMMARY

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Prepubertal and adult male albino rats were exposed either to 1,5 or 10 % of the industrial effluent daily for 60 days for a chronic toxicity study of 120 day experimental schedule or to a single dose of 0.1ml of industrial effluent for acute toxicity study of 12 day experimental schedule. Histological studies with specific reference to quantitation of spermatogenesis were carried out. Typical cellular lesions and the spermatogenic cellular counts were carried out at seminiferous epithelial stage groups I-VI, VII-VIII, IX-XII and XIII-XIV. The studies indicated impairment of spermatogenesis due to delay in the onset of puberty in the prepubertal animals and loss of more mature spermatogenic cells in the adult animal. Acute toxicity studies confirmed the development of primary lesions in the pachytene spermatocytes undergoing 1st meiotic divisions, the spermatogonia was the next most adversely affected cell type. The vulnerability of spermatogenic cells at different stages of SE was in order of IX-XII > XIII-XIV > I-VI > VII-VIII. Comparable effects were observed in the epididymis where the epithelial cell types of caput region were most sensitive to toxicant action than those at caudal region. A comparison of systemic (liver and kidney) and male reproductive toxicity suggested that the residual effect due to accumulation of toxicant within the body led to impairment of spermatogenesis till days 120, while partial recovery was observed for liver and kidney for the same doses. It is opined that the ultimate resultant toxicity of the heterogenous industrial effluent is a function of interactions among the chemical components and their relative influences on each other and also that the toxic effect of industrial effluent on the spermatogenic cells may be mediated through Sertoli cells.