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13 Weeks Repeated-Dose Toxicity Studies of 3-Monochloropropane-1,2-diol in Rats

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Certain chlorinated propanols occur as contaminants in hydrolysed vegetable proteins. Processing of defatted vegetable proteins by traditional hydrochloric acid hydrolysis leads to the formation of 3-monochloro-1,2-propanediol(3-MCPD). The objective of this study was to determine the toxicity of 3-MCPD in the rat following oral(gavage) administration for 13 weeks. SD rats groups were treated as follows : SD rats in control, low, intermediate and high groups were daily given saline, 3-MCPD at doses of 20, 40 and 80 mg/kg body weight. Result of the hematology shows that decreases in the group mean red blood cell count, hemoglobin concentration, packed cell volume of all treated groups. But, the histopathological changes that could be related to treatment were hypospermia, aspermia and germinal epithelium atrophy in testes in treated male groups. In conclusion, the principal findings of toxicological importance were decrease of the function of hematopoietic organs and atrophy in testes. The no toxic dose for these toxicological importances was potentially considered to be below 20 mg/kg/day for male and female rats under the conditions in this study.