

[P-44]**13-Week Toxicity Study of 3-Mcpd In Drinking Water, In Mice**

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3-monochloropropane-1, 2-diol (3-MCPD) is a food processing contaminant, which has been detected in a wide range of foods and ingredients and suspected to cause cancer. 3-MCPD is known to decrease sperm number, motility and fertility rate. To evaluate 13-week toxicity of 3-MCPD, B6C3F1 mice (10/sex/group) were given 3-MCPD at doses of 0, 5, 25, 100, 200 and 400 ppm dissolved in drinking water for 13 weeks. Bodyweight gain and water and food consumption were recorded weekly from start to termination. The animals were examined twice a day for changes in health or behavior. Vaginal cytology evaluation and sperm motility tests at termination were performed to evaluate the effect of reproductive toxicity of 3-MCPD. Animals were euthanized after 13 weeks of treatment and subjected to a complete necropsy and histopathological examination. The liver, kidneys, spleen, heart, adrenals, right testis/right ovary were weighed. Serum clinical chemistry and hematological parameters were evaluated in blood samples taken at study termination.

The body weights of mice at the highest dose were significantly reduced after week 8 for males and week 9 for females ($p=0.05$). The animals receiving drinking water containing 3-MCPD at a concentration of 0, 5, 25, 100, 200 and 400 ppm were equivalent to mean daily intakes of 0, 0.94, 4.60, 18.06, 37.05 and 76.75 mg/kg per day for males and 0, 0.83, 4.15, 15.77, 31.75 and 64.26 mg/kg per day for females, for 13 weeks. Relative kidney and adrenal gland weights of males and kidney, adrenal gland and ovary weights of females at the highest dose were significantly increased ($p=0.05$). The mean estrus cycle at the highest dose were significantly increased ($p=0.05$). The sperm motility at the highest dose were significantly decreased ($p=0.05$). Tubular degeneration of kidneys was found in all groups, but there was no significant difference between groups. Vacuolar degeneration in the brain stem was found in 200 and 400 ppm treatment groups of males significantly

($p=0.05$).

Based on the results of the present study, the 3-MCPD should be viewed as toxic substance, with a maximum tolerance dose (MTD) could be concluded as 37.05 mg/kg per day for males and 31.75 mg/kg per day for females

Keyword : 3-monochloropropane-1, 2-diol, 13-week toxicity, maximum tolerance dose