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**Studies on the potential immunomodulation of
3-monochloro-1,2-propanediol in Balb/c mice**

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3-monochloro-1,2-propanediol (MCPD) is a well-known by-product of acid-hydrolyzed soy sauce during its manufacturing process. MCPD has been reported genotoxic in vitro, and reproductive toxicity and carcinogenicity in rats. However, no previous studies have investigated MCPD-induced alterations in the immune system. In the present study, MCPD was administered by gavage for 14 days at 0, 25, 50, 100, 120mg/kg to female Balb/c mice. The antibody-mediated immune response to sheep red blood cells (SRBC) was assessed using the plaque-forming cell (PFC) assay and splenic cell phenotypes were quantified by flowcytometry. Hematological and histopathological changes were assessed. The T lymphocyte blastogenesis by concanavalin A (Con A) and B-lymphocyte blastogenesis by lipopolysaccharide (LPS) were not significantly changed. The phenotypes of CD3+, CD45R+, CD4+, and CD8+ in spleen of MCPD-treated mice were not significantly changed. There were no significant changes in the hematological and histopathological changes of MCPD-treated mice. However, the significant decrease in thymus weight was observed in 100mg dose group, even though that did not change body weight gain. The cellularities of spleen and thymus were significantly reduced in 100mg dose group. Exposure to 100mg of MCPD decreased the PFC response to SRBC in mice. These results indicate that MCPD could reduce the immune system in Balb/c mice.

Keyword : MCPD, immunotoxicity, PFC, LPS, Con A, cellularity