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IN VITRO IMMUNOTOXICITY OF MBP, A MAJOR METABOLITE OF DI-N-BUTYL PHTHALATE(DBP) ON SD RAT SPLENIC B CELLS AND HUMAN B LYMPHOMA CELLS

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Di-n-butyl phthalate(DBP) is one of the most commonly used phthalic acid esters(PAEs) as a plasticizer, a solvent or a component in cosmetic formulations. MBP(monobutyl phthalate) is a major metabolite of DBP. Although DBP has been identified as a reproductive toxicant in several animal species and also known as a endocrine disruptor, the direct or indirect immunomodulatory effect of DBP has been little reported. In the present study, some effects of DBP dosage to pregnant animal dams on the immune system of their pups were identified using rats as experimental animals and in vitro immunotoxicity of MBP was assayed. DBP dosage to pregnant SD rat dams significantly changed body weights, relative liver weights and relative spleen weights (not at 750 mg DBP/kg) and also resulted in increase of splenic B cell-distribution rate (at high DBP dose) in their pups. In vitro cell viability assay showed MBP had a weak proliferative effect(an increased mitogen response) on splenocytes from 3-week rats at low concentrations but was cytotoxic at high concentrations. These proliferative and cytotoxic effects of MBP were confirmed also in in vitro cell viability assay using human B cell line(Ramos). The effect of MBP on cell viability may result from change in cell cycle through IL-8 receptor.

Keyword : Immunotoxicity, MBP, DBP