Effects of diuron on toxicological and hematological parameters and lymphohematopoietic organs in a rat chemical hepatocarcinogenesis model

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Diuron, 3 (3,4-dichlorophenyl) 1,1, dimethyl urea, is a herbicide mostly employed in agricultural crops such as fruit, cotton, sugar cane, alfafa, and wheat. To evaluate the hazard potential of diuron exposure, general toxicological (body weight, water and food consumption and organ weights) and hematological (examination of blood and bone marrow) parameters and histology of lymphohematopoetic organs were evaluated. Male Wistar rats were divided into five experimental groups: G1 to G5 groups were given a single dose of diethylnitrosamine (DEN – 200 mg/kg b.w., at commencement) while G2 to G5 received 125, 500, 1250 and 2500 ppm of diuron through diet, from 2nd to 8th week of experiment. All animals were submitted to 70% partial hepatectomy at 3rd week and sacrificed at 8th week. At sacrifice, lymphoid organs (thymus, spleen, bone marrow and mesenteric lymph nodes), liver and kidneys were removed for histological analysis. Diuron treatment at concentrations of 1250 and 2500 ppm reduced ($p < 0.001$) the body weight gain and food consumption. Spleen relative weight was significantly higher ($p < 0.001$) at concentrations of 1250 and 2500 ppm than in the only DEN-treated group. In the spleen, diuron exposure to 2500 ppm resulted in increase of red pulp cellularity and haemosiderin deposition at 1250 and 2500 ppm concentrations. In bone marrow there was increase of myeloid/erythroid ratio for G5 group. G4 and G5 groups presented reduced ($p < 0.001$) maturation at myeloid lineage. The results indicate that treatment with diuron for 6 weeks at higher concentrations (1250 and

2500 ppm) resulted in general toxic effects. Besides, histological alterations observed in bone marrow and spleen may contribute to leucopen with decrease of bone marrow cellularity.

Key words: diuron, carcinogenesis, liver, lymphoid organs, immunotoxicity