Evaluation of acute toxicity of dietary supplement product ‘block & burn’ in rats

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The main objective of the study is to assess the toxic effect of the dietary supplement product ‘Block & Burn’ in rats. Since many advertisements about this dietary supplement product have been propagated more frequent this past year and claimed that it can block surplus carbohydrate and fat and also burn calories without any risk. Consequently more products have been sold, especially, to those whose ages are in their early adolescence. So, ‘Block & Burn’ was administered in doses of 1000 mg/kg body weight in three male and three female Wistar rats as group II, 2000 mg/kg body weight as group III and distilled water as the control group to assess the acute toxic effect regarding to overdose usage. After 14 days, the rats were given euthanasia. Heart, liver and kidneys were weight and subjected to histopathological examination. Blood samples were collected for complete blood count. The percentage of weight changes in all groups have no statistically significant differences (p>0.05). Neither do the weights of liver, kidneys and heart. The histopathological examination of liver shows hepatotoxicities which are the deterioration of cells, blood congestion in the central vein and hepatic sinusoids, hemorrhages, abnormal vacuoles and focal necrosis. These symptoms are more severe and abundant in group III than in group II. No toxicity was detected in kidneys and heart. The complete blood count in female subjects from group III shows statistically significant differences in TRBC (p=0.013), MCV (p=0.016) and neutrophil (p=0.041).

Effects of prenatal inhalation exposure to copper nanoparticles on dams and offspring in mouse model

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Increasing number of individuals may be exposed to nanomaterials during pregnancy. Overarching goal of this investigation was to determine if prenatal inhalation exposure to Cu NPs has an effect on dams and offspring and if their Th1/Th2 cytokine profiles were affected. Physicochemical characteristics of Cu NPs were evaluated. Pregnant and non-pregnant mice (C57Bl/6J) were exposed to Cu NPs in the whole-body exposure chamber for 4 hrs/day on gestation day (GD) 3-19 (3.5 mg/m3). The results demonstrate that survival rate of pups at 7 wks of age was significantly lower if they were exposed to Cu NPs during gestation, compared to controls (73% vs. 93%). The average litter size, male/female ratio, birth weight as well as body size at birth was not different between Cu NP-exposed and control mice. Both pregnant and non-pregnant mice exposed to Cu NPs had significant pulmonary inflammation with increased number of neutrophils in the BAL fluid/mouse compared to pregnant and non-pregnant controls. Perivascular lymphoplasmacytic cuffing was found in the lungs of exposed mice and was more pronounced in the non-pregnant group. Similarly, levels of following cytokines (IL-12(p40), G-CSF, GM-CSF, KC, MCP-1, MIP-1α, MIP-1β, RANTES and TNF-a) in BAL fluid were significantly higher in non-pregnant than pregnant exposed mice. Histopathology evaluation of placentas did not find any pathological changes. No translocation of Cu NPs into the placenta or fetus was found using ICP-MS method. Expression of several Th1/Th2 or other immune response genes in pups spleens were found to be significantly up- or down-regulated. Prenatal exposure to Cu NPs caused a strong immunomodulatory effects in offspring.