

The Effects of Maternal Exposure Riboflavin to Prevent Uterus Arsenic Damage in Offspring Rats

Authors : Ali Olfati, Parichehr Nouri

Abstract : Objective: In this study, we have investigated for the first time in the literature the efficacy of riboflavin [VB2] in preventing uterus As₂O₃ damage. Methods: Rats received 40 µg LHRHa for estrus synchronization. 48 pregnant Wistar rats were included. Four groups were formed with 7 rats in each group: Sham, 1.5 mg arsenic trioxide (As₂O₃/L) alone or in combination with VB2 [20 and 40 mg/L] in drinking water [for 21 days continuously]. Similar to maternal generation treatment, the F1-female generation was also arranged [for 35 days continuously until puberty]. Results: Data indicated that As₂O₃ reduced body weight and feed intake (p<0.05). Furthermore, the serum malondialdehyde levels in the As₂O₃ group were significantly higher than that of the control group (p<0.05). At the same time, total antioxidative status and the activities of glutathione peroxidase, superoxide dismutase, and catalase were reduced (p<0.05). Meanwhile, As₂O₃ remarkably increased the production of inflammatory markers [interleukin 6 and C-reactive protein](p<0.05). As₂O₃ administration induced uterus apoptosis-related genes by upregulating caspase-3, iNOS, and Bax genes and downregulating Bcl-2 gene of pubertal F1-female rats (p<0.05). Conclusion: Our observation indicated that VB2 therapy is potentially an effective strategy to modifying the detrimental effects of As₂O₃ in pubertal F1-female rats via suppresses oxidative damages.

Keywords : As₂O₃, inflammation, puberty, vitamin B2

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