البحث السادس:

The effect of Ascorbic acid on Histopathological, Biochemical, Pharmacological, and Immunological Toxicity of Chronic Lead acetate Exposure on The Spleen in a Rat Model

المشتركون فى البحث

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نوع البحث: بحث فردي منشور دوليا لم يسبق تقييمه (غير مشتق من رسالة)

ملخص البحث:

Objective

To evaluate the effect of vitamin C on histopathological, biochemical, and immunotoxicity of chronic lead exposure in the spleen of a rat model.

Methods

The rats were divided into five groups of 10 rats each: group I received normal saline orally as a control group; groups II and III received lead acetate for 4 and 8 weeks, respectively; and groups IV and V received lead acetate and vitamin C for 4 and 8 weeks, respectively. The spleen was excised and processed for light, electron microscopic, histopathological, and biochemical analyses. Quantitative
assessments of matrix metalloproteinase-2 (MMP-2), MMP-9, interleukin-2 (IL-2), IL-6, and tumor necrosis factor-alpha gene expressions were performed by real time PCR.

Results

The examination of control and vitamin C with lead acetate supplemented groups revealed normal splenic architecture. In contrast, the spleen of lead-intoxicated groups exhibited degenerative changes in the spleen, with a significantly decreased expression of IL-2, glutathione peroxidase, superoxide dismutase, and hemoglobin ($P<0.05$), with significantly increased proinflammatory cytokine (IL-6 and tumor
necrosis factor-alpha) expressions, concomitantly with increased oxidative products (malondialdehyde) and protease enzymes (MMP-2 and MMP-9) in the spleen tissues. The coadministration of vitamin C with lead for 4 weeks markedly resolved these changes.

Conclusion

This study may specify the efficiency of vitamin C in lead toxicity prevention in the spleen, represented by the reduced splenic harmful changes produced by lead administration.

Keywords:

histopathological, immunotoxicity, lead acetate, spleen, vitamin C