عنوان مقاله:

The Impact of Metformin on Dust-Induced Histopathological Changes and Oxidative Stress in the Liver: An Insight into Dust Concentration and Liver Biomarkers in Animal Models

محل انتشار:

مجله گزارش های بیوشیمی و زیست شناسی مولکولی, دوره 12, شماره 2 (سال: 1402)

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خلاصه مقاله:

Background: Environmental pollution has a profound impact on both human and animal life. Khuzestan province, which has been plagued by intense dust storms and pollution for decades, is the focus of this study. The research aims to investigate the protective effects of metformin against the toxicity of particulate matter in the livers of rats. Methods: Male Wistar rats were selected for the study and divided into six groups: a control group, Metformin-treated groups, Iraqi dust-exposed group (Iraqi-D), Local dust-exposed group (Local-D), Iraqi dust-exposed with Metformin treatment group (Iraqi-D+Metformin), and Local dust-exposed with Metformin treatment group (Local-D+Metformin). The rats were exposed to local and Iraqi dust through a nebulizer and received oral metformin for a duration of ۲۱ days. At the end of the intervention, liver biomarkers and oxidative stress factors were evaluated enzymatically. Results: The study revealed that rats exposed to Iraqi and local dust experienced a significant increase in liver biomarkers,

including aspartate aminotransferase (AST), alanine transaminase (ALT), and alkaline phosphatase (ALK) levels, alongside a decrease in glutathione (GSH) concentrations and an increase in malondialdehyde (MDA) levels. However, treatment with metformin was effective in preventing the increase in these biomarkers, restoring GSH levels, and averting the rise in MDA levels, as compared to the control group. Conclusion: Exposure to particulate matter from Iraq and the local region can induce alterations in biomarkers and oxidative stress levels in the rat liver, and these effects can be mitigated through metformin treatment.

کلمات کلیدی:

Dust, Liver Biomarker, Metformin, Oxidative Stress, Pollution.

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