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Protective Effects of Tocotrienol Supplementation on Blood and Liver Functions in Rats Fed a High-Fat Diet

Conflict of interest: nothing to declare.

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Ethics statement. This study was licensed and conducted under the regulation of the Department of Physiology at the Faculty of Veterinary Medicine, and the Ethics Committee reviewed and approved this study (No. 2021/10).

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Abstract

Introduction. Obesity has become one of the most serious worldwide health issues, affecting a sizable proportion of the world's population.

Purpose. To evaluate the protective role of tocotrienols produced from annatto oil on blood parameters and liver functions in rats fed a high-fat diet.

Materials and methods. Eighteen male rats were divided into three groups: the first group was fed normal chow as a control group, and the second and third groups were fed a high-fat diet to promote obesity in the presence or absence of tocotrienols (60 mg/kg for 12 weeks) and were examined for blood markers and biochemical and histopathological changes in the liver.

Results. The increase in liver weight of the high fat diet and high fat diet plus tocotrienol groups was significant at the final stage of the experiment ($P < 0.05$) in comparison to the control group. On the other hand, males treated with HFD+ tocotrienol in the protective group showed significant ($P \leq 0.05$) differences in the results of RBC and MCH. A significant ($P \leq 0.05$) increase in WBC and neutrophils% in male rats treated with HFD alone compared with the control group and protective group.

Conclusion. Tocotrienol treatment increase MCH compared with control group but reduced WBC count and neutrophils% in male rats treated with high fat diet plus tocotrienols compared to the high fat diet alone group. It also led to an improvement in histological changes in liver of the group treated with tocotrienols. Tocotrienols reduce