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THE EFFECT OF THYME SUPPLEMENTATION ON THE GLUT4 CONTENT IN MYOCARDIUM AND LIPID PROFILE IN RATS WITH TYPE 2 DIABETES

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Introduction: Type 2 diabetes is a metabolic disorder and it is considered the fifth cause of death in the world after infectious diseases, cardiovascular diseases, cancer and trauma. Nowadays, there is a lot of interest in the field of non-drug therapies, such as exercise and medicinal herbs. Fewer researches have been done about the effect of thyme on diabetes. The purpose of this study was to examine the effect of 8-week thyme supplementation on GLUT4 protein content in myocardial and lipid profile of type 2 diabetic rats.

Methods: For the purpose of current study, white male Wistar rats (n= 48) weighing in the range of 220 - 240 g were used. Initially, the rats were randomly distributed into 3 groups of 8 rats as follows: 1- healthy control 2- diabetic control 3-diabetic and thyme supplementation. The rats became diabetic through the injection of STZ (37 mg / kg) and high-fat diet. Oral thyme supplementation lasted for 8 weeks. 48 hours after the last supplementation session, the rats were anesthetized and right after their hearts immediately extracted and frizzed in nitrogen -80° C and kept for later analysis. After homogenizing the muscle samples in homogenization buffer below zero degree and centrifuging them, the supernatant was collected for histological and Western blotting analyses to determine the protein content of GLUT4. Fasting blood glucose was measured using a glucometer. Data were analyzed through the one-way and multivariate ANOVA and independent t-test in SPSS software (version 21).

Result: Myocardial GLUT4 increase in thyme supplementation group was significant. Fasting blood glucose rate indicated a significant decrease ($P < 0.05$), and significantly decreased the lipid profile level of the supplementation group compared to those of Diabetic control group ($p < 0.05$).

Conclusion: According to the findings of the current study, it seems that thyme supplementation increase myocardial GLUT4 and prevent the development of cardiomyopathy in type 2 diabetic rats' heart. The beneficial effects of thyme supplementation on overall metabolic state and blood glucose indicate its therapeutic properties.