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The Effect of Endurance Training on Myocardial Fibrosis and Oxidative Enzymes in Type 2 Diabetic Rats

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Introduction: Type 2 diabetes is a chronic metabolic disease and a complex disorder with several micro and macro vascular complications in different parts of the body, which is associated with cardiac fibrosis. On the other hand, endurance training seems to prevent the development of cardiac fibrosis in diabetes by reducing fasting glucose levels and increasing antioxidant indices. Methods: 24 male Wistar rats were randomly divided into three groups: healthy control (NC, n=8), diabetes control (DC, n=8) and exercise diabetes (DT, n=8) after familiarization with the laboratory environment. Diabetes was induced to diabetic animals through streptozotocin injection. In the training groups, rats performed 8 weeks of intermittent endurance training on a treadmill. Hematoxylin-eosin and Masson trichrome staining were used to check the level of fibrosis and cell disorder. Serum malondialdehyde (MDA) was measured by thiobarbituric acid spectrophotometry. Also, total serum antioxidants were measured by spectrophotometric method.

Results: Rats in the training group showed a decrease in fibrosis, fasting glucose, and also a decrease in triglyceride and total cholesterol compared to the diabetic control group

($P < 0.05$).

Conclusion: It seems that Endurance training in diabetic rats prevents the development of cardiac fibrosis caused by diabetes by reducing fasting blood sugar, lipid profile and increasing total antioxidants. However, more studies are needed.

It is therefore recommended, for quick commercial operation of food irradiation, that positively adequate education about the technique is disseminated among relevant stakeholders, and that government should establish more irradiation facilities at strategic areas in Nigeria for easy access by both farmers and marketers of perishable food crops, and interested individuals.

Biography

Mahdi Faramoushi has a PhD in Exercise physiology from Tabriz University (2014). He has focused his research on the effect of exercise and *Thymelaeaster* on diabetes, and in this way he has obtained good results and published many papers. He is currently teaching and researching as an associate professor at Tabriz University of Islamic Arts.