

Original Paper

## Effect of swimming training and arbutin supplement on cardiac antioxidant enzymes and oxidative stress in diabetic rats

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### Abstract

**Background and Objective:** Oxidative stress plays a major role in the structural and functional changes of the myocardium due to diabetes. This study was done to determine the effect of swimming training and arbutin supplement on cardiac antioxidant enzymes and oxidative stress in diabetic rats.

**Methods:** In this experimental study, 42 male Wistar rats were randomly allocated into 6 groups including control, diabetes, Arbutin, diabetes+Arbutin, diabetes+exercise and diabetes+ exercise + Arbutin (combined). Diabetes induced using alloxan (90 mg/kg/bw, intraperitoneally). Arbutin (50 mg/kg/bw, ip) was administered for 5 days a week. The exercise consisted of swimming training at 5 min to 36 min per day, 5 days a week for 6 weeks. Renal Malondialdehyde, catalase level and superoxide dismutase (SOD) activity were evaluated in animals.

**Results:** Diabetes significantly increased cardiac Malondialdehyde level and decreased cardiac SOD activity and catalase level ( $P<0.05$ ). Six weeks of supplementation with Arbutin, swimming training and combined intervention significantly increased catalase level and superoxide dismutase activity compared to the diabetes group ( $P<0.05$ ). Malondialdehyde level significantly reduced in combined and exercise groups in comparison with diabetic group ( $P<0.05$ ).

**Conclusion:** Regular training (swimming) and Antioxidant supplement (Arbutin) protect the cardiac tissue against diabetes-induced oxidative stress through their antioxidants capacity and the combination of the two interventions have synergic effect.

**Keywords:** Diabetes mellitus, Arbutin, Aerobic exercise, Malondialdehyde, Superoxide dismutase

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