عنوان مقاله:

Preventive effects of intense continuous endurance training on isoproterenol-induced cardiac apoptosis and protein synthesis gene expression in wistar rats

محل انتشار:

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خلاصه مقاله:

Objectives: Heart failure contributes to cellular lesions and left ventricular dysfunction. The present study aimed to determine the effects of intense continuous endurance training on protein synthesis gene expression and prevention of isoproterenol-induced cardiac apoptosis. Methods: In this experimental study, ۱۶ male Wistar rats were assigned to exercise and control groups. After eight-week treadmill running, with ۱۵° inclination, at ۶۵-۷۵% of VO۲max for ۳۰-۶۰ minutes, Isoproterenol (۳ mg/kg) was injected into the rats subcutaneously for ۷ days. And ۲۴ hours after the last injection, the left ventricular tissue was stored at -۸۰°C for qRT-PCR and TUNEL assay. Between-group differences were determined by parametric and non-parametric tests, using SPSS software version ۲۴. Results: There was a significant increase in mTORC۱ gene expression in the training group (P = ۰.۰۲۶) but AMPK alterations failed to be significant. eEF۲K gene expression was suppressed in the training group (P = ۰.۰۰۱) which resulted in a significant increase in eEF۲ expression (P = ۰.۰۰۵). Left ventricular weight and heart weight/body weight increased compared to the control group (P = ۰.۰۲۸, P = ۰.۰۱۰, respectively). And the training protocol effectively prevented the formation of isoproterenol-induced apoptotic cells (P <۰.۰۰۱). Conclusions: The exercise training protocol increased protein synthesis gene expression, and improved cardiac protection by reducing apoptosis. This protocol can be considered a promising modality in preventing and reducing apoptosis induced by heart disease such as myocardial infarction.

کلمات کلیدی:

Treadmill endurance training, Cardio protection, mRNA translation, Apoptosis, Wistar rat