

Swimming impacts on pancreatic inflammatory cytokines, miR-146a and NF-κB expression levels in type-2 diabetic rats.

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Abstract

BACKGROUND:

Obesity-induced chronic inflammation is a key component in the pathogenesis of insulin resistance and type-2 diabetes Objective: This study aimed to evaluate the effect of swimming exercise on pancreatic expression levels of inflammatory cytokines, miR-146a and NF-κB in type-2 diabetic male rats.

METHOD:

Twenty- eight male Wistar rats were divided into four groups: control (Con), exercise, diabetes and diabetic exercise (n = 7). Diabetes induction performed by the combination of high-fat diet (HFD, 4 weeks) and streptozotocin (35 mg/kg. ip). After induction of diabetes, the rats swam in the exercise groups for 12 weeks. Then, blood and tissue samples were collected.

RESULT:

Our results indicated a significant increase in expression levels of miR-146, NF-κB and inflammatory cytokines (IL-6, TNF-α, and IL-1β) while a significant decrease in pancreatic expression levels of TRAF6 and IRAK1 in diabetic group as compared to the control group. In contrast, swimming exercise resulted in a significant decrease in expression levels of miR-146a, NF-κB and inflammatory cytokines and a significant increase in expression levels of TRAF6 and IRAK1 in the exercise-diabetic group compared to the diabetic group.

CONCLUSION:

Our results indicated a significant increase in expression levels of miR-146, NF-κB and inflammatory cytokines (IL-6, TNF-α, and IL-1β) while a significant decrease in pancreatic expression levels of TRAF6 and IRAK1 in diabetic group as compared to the control group. In contrast, swimming exercise resulted in a significant decrease in expression levels of miR-146a, NF-κB and inflammatory

cytokines and a significant increase in expression levels of TRAF6 and IRAK1 in the exercise-diabetic group compared to the diabetic group.

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KEYWORDS:

Diabetes; IRAK1; NF- κ B; miR-146a; TRAF6; inflammatory cytokines