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Synergistic beneficial effects of resveratrol and diet on type 2 diabetes mellitus

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Beneficial effects of resveratrol have attracted increasing interest in the last few years. The worldwide epidemic of diabetes has greatly increased the cost of treating both the disease and its numerous debilitating complications. We investigated the effects of weight loss and resveratrol on glucose homeostasis. Obesity was induced by feeding mice a high-fat (HF) diet (60% kcal from fat) for 10 weeks. After 10 weeks, mice were switched to a low-fat (LF) diet (12% kcal from fat; HF-LF) and treated with Resveratrol or maintained on an HF (HF-HF) and treated with Resveratrol for a further 6 weeks. After 16 weeks, HF-LF mice weighed less than HF-HF mice. cardiac hypertrophy was decreased and accompanied by increased SIRT1 and PGC1 α expression in HF-LF mice. Impaired glucose tolerance had developed in HF mice at 10 weeks, as area under the curve (mmol/L $\cdot$ min) was significantly increased. At 16 weeks, glucose tolerance was improved in HF-LF mice compared with HF-HF group (43.1 ± 1.8 [n = 8] vs. 70.19 ± 1.4 [n = 8]; P, 0.05). Western blot analysis showed a decreased phosphorylation of Akt as well as a decreased protein level of GLUT 2 in skeletal muscle of HFD fed mice. Treatment with Resveratrol enhanced insulin signaling and glucose uptake in HF-LF mice. Thus, lowering body weight by switching to LF diet and treatment with resveratrol is associated with decreased cardiac hypertrophy and improvements in both overall body insulin sensitivity and glucose homeostasis.

Biography

Osama Yousef Abo Alrob, graduated from university of Alberta (PhD in basic medical sciences). I was supervised by Prof. Gary Lopaschuk and our lab is interested in heart and metabolic diseases such as obesity and diabetes. Currently, i am assistant professor in faculty of pharmacy. I teach courses related to Physiology and Pathophysiology.

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