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The protective effect of resveratrol on islet insulin secretion and morphology in mice on a high-fat diet

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The aim of this study was to investigate the effect of resveratrol on beta cells in male C57BL/6J mice fed a high-fat diet and the possible mechanisms. Male C57BL/6J mice were randomly divided into three groups: normal control (NC) group, high-fat diet (HF) group and high-fat diet and resveratrol treatment (HFR) group (15 in each group). HFR group was fed with high fat diet for 8 weeks and then orally administered resveratrol at 400 mg/kg daily. Twenty-four weeks later, the function of insulin secretion *in vivo* and *in vitro* was improved robustly in HFR group compared with HF group. The levels of glucose and lipid metabolism, beta cell mass, lipid content, and oxidative stress were lower in HFR group than in HF group. Simultaneously, resveratrol administration promoted the expression of SIRT1 in islets, while the expression of uncoupling protein 2 (UCP2) was restrained. Resveratrol, as well, also had a beneficial effect on the ratios of expressions of Bcl-2/Bax and levels of malondialdehyde/glutathione peroxidase. Resveratrol can protect islets from abnormal insulin secretion and morphological changes induced by a high-fat diet. The effect might be partly related to activated SIRT1 signal pathway, improved oxidative stress induced damage and incidence of apoptosis.

Biography

Jiaoyue Zhang has completed her MD and PhD at the age of 28 years from Tongji Medical College, Huazhong University of Science and Technology. Now she is an attending doctor in the Endocrinology department of Union Hospital in Wuhan. Her research is focused on nutrition and the development of diabetes, especially on beta cell dysfunction. She has published several papers in the international journals.

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