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Taurine attenuates hypertension and improves insulin sensitivity in the fructose-fed rat, an animal model of insulin resistance.

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Abstract

Fructose feeding induces moderate increases in blood pressure levels in normal rats, which is associated with hyperinsulinemia, insulin resistance, and impaired glucose tolerance. Increased vascular resistance, sodium retention, and sympathetic overactivity have been proposed to contribute to the blood pressure elevation in this model. Taurine, a sulphur-containing amino acid, has been reported to have antihypertensive and sympatholytic actions. In the present study, the effects of taurine on blood pressure, plasma levels of glucose and insulin, glucose tolerance, and renal function were studied in fructose-fed rats. Fructose-fed rats had higher blood pressure and elevated plasma levels of insulin and glucose. The plasma glucose levels were higher in fructose-fed rats than in controls at 15, 30, and 60 min after the oral glucose load. Treatment with 2% taurine in drinking water prevented the blood pressure elevation and attenuated the hyperinsulinemia in fructose-fed rats. The exaggerated glucose levels in response to the oral glucose load was also prevented by taurine administration. Thus, taurine supplementation could be beneficial in circumventing metabolic alterations in insulin resistance.

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