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Thymoquinone reduces hepatic glucose production in diabetic hamsters.

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Abstract

The aim of this study was to elucidate the mechanisms underlying the glucose lowering effects of thymoquinone in streptozotocin (STZ)-induced diabetic hamsters in terms of hepatic glucose production. Diabetes was induced by intraperitoneal injection of 65 mg/kg body weight of STZ. Treatment with thymoquinone commenced 4 weeks after induction of diabetes at a daily dose of 50 mg/kg body weight by gastric gavage. Blood glucose and glycated hemoglobin levels were significantly reduced depending on periods of the treatment. Thirty days after commencement of thymoquinone-treatment, hepatocytes were isolated using collagenase to determine liver glucose production. Glucose production after 2 h incubation of the isolated hepatocytes with gluconeogenic precursors (alanine, glycerol and lactate) was significantly lower in hamsters treated with thymoquinone as compared to that in vehicle controls. The results of this study demonstrate that the antidiabetic action of thymoquinone is at least partially mediated through a decrease in hepatic gluconeogenesis.

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