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The effect of *Carum carvil* oil on the level of heat shock proteins 70 and 72 in the liver and skeletal muscle tissues in diabetic rats

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Abstract

The metabolic abnormalities of diabetes lead to superoxide overproduction in vessels and myocardium resulting in diabetes complications. *Carum carvi* oil probably reduces oxidative stress and increases heat shock protein by hypoglycemic, hypolipidemic, and antioxidant effects. We aimed to study the effect of *Carum carvil* oil on HSP in the liver and skeletal muscle in diabetic rats. 50 male Sprague Dawley rats were randomly divided into 5 groups (control, drug control, drug carrier negative control, negative control, and treatment). Diabetes was induced in the negative controls and treatment groups with streptozotocin (40mg/kg body weight, single dose, IP). Control and negative control groups did not receive any therapy but treatment and drug control rats were gavaged with 10 mg/kg of *Carum carvil* oil daily during 30 days of the study. The weight of rats was measured on 3,7,21,30 days and fasting blood sugar was measured on 3 and 30 days. The liver and skeletal muscle tissues were removed at the end of the experiment. The level of HSP 70 and 72 was determined by an ELISA kit. The findings of HSP measurement demonstrated an increase in level of these protein in the treatment group but in the drug carrier negative control and negative control groups. HSP was decreased significantly due to the injection of STZ. Our results showed that the compounds in this oil (*Carum carvi*) can increase the concentration of HSP 70 and 72 in the liver and skeletal muscle tissues.

Key words: Diabetes mellitus, *Carum carvil* oil, Heat shock proteins 72 and 70, Liver, Skeletal muscle

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