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Study the effects of *Hemiscorpius lepturus* scorpion venom fractions on the levels of Glucose and Insulin, Glucagon and Cortisol Hormones in rats

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Abstract

The *Hemiscorpius lepturus scorpion* is known as the most dangerous *scorpion* in the south and southwest regions of Iran. This *scorpion* can cause illness and even death in humans and animals. The purpose of this study was to investigate the metabolic and endocrine effects of different fractions of *Hemiscorpius lepturus* venom. For this purpose, scorpion venom was extracted by electric shock method and after separating the solution phase and activation of the venom by freeze drying method and with the help of column chromatography by Sephadex G-250 gel, 6 fractions were separated based on optical absorption at 280 nm. Then 72 male Wistar rats were divided into 8 equal groups including control (NS), crude venom (1000 µg/kg), fractions I (120 µg/kg), II (430 µg/kg), III (80µg/kg), IV (180 µg/kg), V (60 µg/kg) and VI (130 µg/kg) divided and according to the above amounts, respectively, with normal saline, crude venom and different fractions through intraperitoneal injection. After 1, 3, 24 and 72 hours, the concentration of glucose and the insulin, glucagon and cortisol were measured by elisa with specific rat kits. The results showed that the injection of crude venom and all fractions caused a significant increase in glucose compared to the control group. Also, a significant increase of cortisol and glucagon was observed after injection in crude venom and fractions II and VI. Also, the average insulin in the groups receiving crude venom and fractions II and VI showed a significant decrease. These findings showed that the injection of different fractions of *Hemiscorpius lepturus* scorpion venom can affect the metabolic process and cause changes in the metabolic processes by affecting the glucose regulating hormones. Identifying these effects, considering the wide effects of these hormones in metabolism, as well as the changes caused by the venom fractions, can help to identify the toxicity mechanisms as accurately as possible and also to adopt specific treatment methods in cases of scorpion stings. be helpful and useful.

Key words*: Hemiscorpius lepturus scorpion*, Fractions, Insulin, Glucagon, Cortisol, Glucose

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