

Effects of *Mesobuthus eupeus* scorpion venom on the release of proinflammatory and anti-inflammatory cytokines in rats

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Abstract

Scorpion venom is a collection of toxins that exhibit a wide range of biological properties and activities. The clinical signs and symptoms observed in humans and laboratory animals under scorpion sting are associated with a systemic inflammatory response of the host. The secretion and activation of proinflammatory mediators is one of the most important factors involved in the pathogenesis of scorpion venom. The aim of this study was to compare the levels of proinflammatory cytokines (IL-6) and anti-inflammatory cytokines (IL-10) in rats after subcutaneous injection of Mesobuthus eupeus venom with control group that received only physiological serum subcutaneously. after determining the LD50 of Mesobuthus eupeus scorpion venom, 0.5 mg subcutaneously was injected into the venom received group. In addition, 12 rats were injected subcutaneously with 0.5 ml of physiological serum (equal volume of scorpion venom) as a control group. Heparinized blood samples were collected from the hearts of animals at 4, 24 and 72 hours after venom injection. ZellBio ELISA diagnostic kit was used to determine the plasma levels of cytokines (IL-6 and IL-10). The level of interleukin 10 four hours after the injection of the venom showed a statistically significant increase compared to the control group, but the amount of interleukin 6 decreased compared to the control group. the levels of interleukin 10 and interleukin 6, twenty-four hours after injection of scorpion venom did not show a significant change compared to the control group and reached a stable state.it was concluded that the clinical symptoms caused by scorpion stings due to the balance between pro-inflammatory and anti-inflammatory cytokines and this balance between cytokines plays a pivotal role in the development of clinical symptoms in scorpion stings.

Keywords: Mesobuthus eupeus Scorpion, Pro-inflammatory cytokines, Anti-inflammatory cytokines, Rat