

Rats' in vivo assessment of the molecular and anatomical alterations brought on by the venom of stonefish.

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Abstract

One of the most hazardous venomous fish species known to science is the stonefish (*Synanceia verrucosa*). Humans may not survive the venom of stonefish, and envenomation can be extremely dangerous, causing excruciating agony and substantial socioeconomic expenses because the victims may need days or weeks to heal from their wounds. There has been very little study done on marine life, especially venomous fish. This work aims to assess the toxicity of the venom of the stonefish (*S. verrucosa*) in addition to alterations in biochemistry and histology in a model of rats. Methodology: SCUBA divers were used to gather fish samples from the northern Red Sea locations (the Gulf of Aqaba and Jordan). The Sprague-Dawley rats were given a sublethal dosage of venom intramuscularly, and the resulting biochemical and histological alterations were studied. The crude venom was isolated from the spines. Results: 38 µg of venom/kg of body weight was estimated to be the venom's 24-hour LD50. After treatment, the levels of the serum biochemical markers creatine kinase, lactate dehydrogenase, and alanine transaminase rose six hours later and stayed noticeably elevated for the next twenty-four hours. Animals that were experimented on displayed symptoms such as convulsions, paralysis and lack of muscle coordination, urine, and respiratory failure. Liver tissues were severely damaged by envenomation. Rats receiving prolonged therapy also showed signs of renal tubule enlargement and interstitial bleeding. Moreover, the venom had myotoxic effects and produced neuropathological changes such brain tissue spongiosis.

impact on the tissues of the heart. Conclusion and Importance: The test rat model is hepatotoxic, nephrotoxic, myotoxic, and neurotoxic to the venom of *S. verrucosa*, which also contains components that cause edoema. The results might motivate the medical community to create a valuable, homegrown pharmaceutical product connected to anti-venom.

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