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Lidocaine as a potential antagonist for *Odontobuthos doriae* scorpion venom in mice

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Background and Aims: Odontobuthos doriae (O. doriae), as a local scorpion in middle and southern parts of Iran, is known as a serious health threat, causing wide range of toxicities. α -toxins in its venom, activate Na+ channels. Therefore, lidocaine as a Na+ channel blocker, seems to be a good candidate to reverse most of its side effects. Thus, in this project, the efficacy of lidocaine against this venom's lethality is studied.
Methods: To calculate the LD50 of compounds, 0-500 mg/kg and 6-12 mg/kg of lidocaine and O. doriae's crude venom, respectively, were used in 14-days acute toxicity testing observations. According to final calculated LD50s, different safe amounts of lidocaine (25%, 50% and 80% of LD50) were administered at the same time with different toxic doses of crude venom (80%, 100% and 120% of LD50). Experiments were carried out based on 2, 4, 6h and a daily 14-days observations.
Results: 110 mg/kg and 10 µg/mice are LD50 for lidocaine and crude venom, respectively. Although, 80% LD50 of lidocaine caused 50% decrease in lethality induced by crude venom's at LD50, decreasing the amount of lidocaine to 50% and 25% LD50, reduced its effects on lethality. However it could reduce many poisoning effects of the venom. Further, 80% LD50 lidocaine could not reverse the lethality effects of the O.d scorpion crude venom at 120% LD50 .
Conclusions: Although the 80% LD50 of lidocaine decreases the O. doriae scorpion venom lethality, but lidocaine's side effects does not make it as a good candidate for supporting care indication in O. doriae's venom toxicity.

Keywords: Lidocaine; *Odontobuthos doriae*; Scorpion venom