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Histological Characteristics of the Organs of Adult Zebrafish as a Biomarker for the Study of New Drugs with Effect on the Snake Venom of Bothrops alternatus

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Abstract : Summary: As animal model, zebrafish can be a good opportunity to establish a profile of tissue alteration caused by Bothrops alternatus venom and to screen new anti-venom drugs. Objective: To establish tissue biomarkers from zebrafish injected by snake venom and elucidate the use of glucocorticoids in ophidic accidents. Materials and Methods: The Danio rerio fish were randomly divided into four groups: control group, venom group, Dexamethasone1h before venom injected group and Dexamethasone 1 h after venom injected group. The concentration of Bothrops alternatus venom was 0.13 mg/ml and the fish received 20µl/Fish. The Body weight measurement and histological characteristics of gills, kidneys, liver, and intestine were determinate. Results: Physical analysis shows necrosis accompanied by inflammation in animals receiving the Bothrops alternatus venom. Significant difference was observed in the variation of weight between the control group, and the groups received the venom (t student test, $p < 0.05$). The average histological alterations index of gill, liver, kidney or intestine was statistically higher in animals received the venom (t Student test, $p < 0.05$). The alterations were lower in the groups that received Dexamethasone 1h before and after venom injected compared to the group that received only the venom. Dexamethasone 1h before venom injected group had minor histopathological alterations. Conclusion: The organs of zebrafish may be a tissue biomarker of alterations from Bothrops alternatus venom and dexamethasone reduced the damage caused by this venom in the organs studied, which may suggest the use of zebrafish as animal model for research related to screening new drug against snake venom.

Keywords : zebrafish, snake venom, biomarker, drugs
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