

## Study about antiophidic action of juice and aqueous extract of *Annona muricata* leaves on *Lachesis muta* envenomation.

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**Introduction:** The human envenomation by *Lachesis* snakes is quite severe, characterized by pronounced local tissue damage and systemic effects, such as hypotension and bradycardia, dizziness, nausea, abdominal cramps and diarrhea. The only specific therapy available is the serum therapy. The antiophidic action is attributed to many plants. Here in Brazil, specially in the north and northeast regions, the juice and aqueous extract of soursop leaves (*Annona muricata*) are often used by local population to treat *Lachesis muta* envenoming. **Objectives:** Evaluate the lethality, hematological, biochemical, blood pressure, and inflammation parameters changes induced by *L. muta* snake venom, as well as the relevance of treatment with fruit juice and the aqueous extract of soursop leaves. **Methods:** The animals received intramuscular injection of saline or non-lethal dose of *L. muta* venom (3mg/animal) and received water or treatment through gavage, according to the group they were labeled. Each group was analyzed after 1, 6 and 24 h of injection. The biochemical, haematological and hemostatic parameters analyzed in this work were: albumin, total proteins, glucose, urea, creatinin, aspartate aminotransferase (AST) and creatine kinase (CK), hematocrit, total hemoglobin, red blood cells count (RBC), prothrombin time (PT) and **activated partial thromboplastin time (APTT)**. The inflammatory profile was evaluated by total white blood cells count (WBC), white blood cell differential, interleukin-6 (IL-6) concentration and serum proteins fractionation. The blood pressure measure was performed using tail-cuff plethysmography with heating method. Lethality assay were evaluated using probitus method. **Results:** The haematological parameters shows an initial hemoconcentration followed by extensive hemolysis, as evidenced by decreased hematocrit, total hemoglobin and RBC. Biochemical analysis showed a decrease of albumin and total proteins and urea increased as a result of the envenomation. Treated animals showed an increase of AST and decrease of CK. There was also increase of PT and APTT during the first hour, and time-dependent decrease of the blood pressure after the envenomation, intensified by the treatment with juice. The increase of IL-6 was observed 1 and 6 hours after envenoming, the WBC differential revealed neutrophilia in the early hours and increased lymphocytes 24 hours after the envenoming, and the changes observed in the profile of serum proteins shows characteristics of acute inflammatory process. The lethality assay reveals LD<sub>50</sub> of 51.0 ± 6.3 mg/kg for the group injected with venom without treatment; 48.3 ± 8.6 mg/kg for the group injected with venom and treated with juice of soursop; and 62.2 ± 6.8 mg/kg for the group injected with venom and treated with extract of soursop leaves. **Conclusion:** The clinical profile of *L. muta* envenoming was well characterized. In general, treatments with aqueous extract of soursop leaves and juice do not alter relevantly the clinical picture of envenomation, as LD<sub>50</sub> values have shown us. However, treatments with both juice and aqueous extracts showed possible improvement against the myotoxicity triggered by the venom and the maintenance of hemostatic parameters. However, it seems to worsen the hypotensive effect installed during the envenomation.

**Key-words:** *Lachesis muta*, envenomation, antiophidic action, soursop, *Annona muricata*.

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