

## **Preliminary studies and biochemical characterization of bradykinin-potentiating peptides from *Lachesis muta* venom.**

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**Introduction:** Bradykinin-potentiating peptides (BPPs) are widely distributed in venoms from many species as pit vipers and scorpions. They act directly at the renin-angiotensin-aldosterone system (RAAS), preventing the release of angiotensin II and degradation of bradykinin by inhibiting the angiotensin-converting enzyme. The isolation and biochemical characterization of BPPs from pit vipers venoms are important to the development of specific drugs for the control of hypertension in humans. Pit vipers from genus *Lachesis* are known as the biggest venomous animals in Latin America. Because of their length, they are able to inject a large dose of venom into their victims. Therefore, the bite can lead the victim to death, due to complications induced by venom toxins that present coagulant, hemorrhagic, neurotoxic and inflammatory activities. **Objective:** The aim of this work was the screening and isolation of bradykinin-potentiating peptides from *Lachesis muta* venom and evaluation of their ability to inhibit the angiotensin-converting enzyme (ACE). **Methods:** The purification protocol started with an exclusion chromatography step on Sephacryl® S100 column and twelve fractions were obtained, S1 to S12. The assays to determinate which fraction had the BPPs were performed as described by Li et al. (J.Pharm.Bio.An., v.37, 219, 2005), with some modifications. S10 and S11 showed high capacity to inhibit ACE and were purified by reversed-phase fast protein liquid chromatography (FPLC) using a C18 column (250 x 2.1 mm, Vydac). The fractions eluted in this step were collected and tested for their ability to inhibit ACE. **Results:** Some fractions eluted in the second chromatographic step (RP-FPLC) of both S10 and S11 fractions revealed some compounds able to inhibit ACE activity. These compounds showed high capacity of inhibition even in the lowest concentrations, demonstrating the power of *Lachesis muta* venom on causing hypotension in its victims. However, these compounds are not completely isolated, demanding additional chromatographic steps. **Conclusion:** The reported results demonstrate that *Lachesis muta* venom presents a great research potential for ACE inhibitors, since some fractions were capable to inhibit the enzymatic activity.

**Keywords:** bradykinin-potentiating peptides, *Lachesis muta*, hypertension, angiotensin-converting enzyme.

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