BIOCHEMICAL AND BIOLOGICAL PROPERTIES OF THE DUVERNOY’S GLAND SECRETION OF THE COLUBRID SNAKE *Leptophis ahaetulla marginatus*


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INTRODUCTION AND OBJECTIVES:
*Leptophis ahaetulla marginatus* (Lam) is a neotropical opisthoglyphous snake characterized by its colorful appearance and aggressive behavior. As little is known about its Duvernoy’s gland (DG) secretion, herein, we studied the composition and biological activities of this secretion.

MATERIALS AND METHODS:
We performed one-dimensional SDS-PAGE of the crude DG secretion milked from its rear fangs, and evaluated the ability of this secretion to hydrolyze molecules such as hyaluronic acid, azocasein, acetylthiocholine and human fibrinogen. In addition, in order to understand its biological role, we tested the effect of this secretion on mouse gastrocnemius muscle.

RESULTS AND CONCLUSIONS:
We found that the DG secretion of Lam is constituted - under reducing condition - by proteins in the range of 14.4 - 62.2 kDa. Regarding to its hydrolytic activities, it was not capable to hydrolyze hyaluronic acid, but it affected the other molecules tested. The proteolytic activity on azocasein was low and significantly inhibited by 1,10-phenanthroline and phenylmethylsulfonyl fluoride (Cf= 5 mM), but the first inhibitor impaired almost all caseinolytic activity (about 90%), suggesting the presence of mainly metalloproteinases. Moreover, the secretion rapidly hydrolyzed the α-chain of fibrinogen leaving the γ-chain unaffected. However, the most distinctive feature of this secretion was its high acetylcholinesterase activity, which has not been reported to date in other DG secretion of a South American colubrid snake. Locally, when injected into the gastrocnemius, the DG secretion of Lam only displayed a slight myonecrotic activity with edema and inflammatory reaction, but no sign of hemorrhage was evidenced. In conclusion, these results provide relevant information about the potential toxicity of the DG secretion of Lam, and give insight into future directions for research on this secretion.

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KEY WORDS: COLUBRIDAE, TOXIC SECRETION, ACETYLCHOLINESTERASE ACTIVITY.