Evaluating New Molecules And Activities From *Lonomia obliqua* Caterpillar

Chudzinski-Tavassi, AM[1], Reis, CV[1] , Flores, MPA[1] , Pereira, ALM[1] , Fritzen, M[1]

[1]*Biochemistry and Biophysics Laboratory - Butantan Institute, São Paulo, Brazil*

The skin contact with *Lonomia* caterpillar bristles causes a consumption coagulopapthy. The venom of *L. obliqua* bristles presents procoagulant activity. From a cDNA library we cloned and expressed a prothrombin activator (Lopap) and from the bristles extract we characterized a FX activator (Losac). Several clones were sequenced and the analysis was carried out by expressed sequence tags (ESTs). Among the expressed genes the initial set was obtained by assembling ESTs in clusters of unique genes, and the Lopap, serine protease inhibitors, BPP, HSP, ribosomal, structural and cellular cycle proteins were identified. A data base with1500 sequences was deposited in NCBI. An active form of r-Lopap was expressed and its infusion in mice induced fibrinogen depletion similar to that observed with native Lopap. Both, Lopap and r-Lopap promoted prothrombin hydrolysis generating prethrombin-2, F1.2 and thrombin. Losac is a single chain protein (43 kDa) that cleaves the FX heavy chain producing the FXaα . This activity is independent of Ca^{2+} and it is abolished by serino protease inhibitors.

On HUVECs rLopap and Losac are able to modulate cell survival preventing apoptosis. rLopap modulates the expression of Bcl-2 genes family. Also rLopap increases NO and PGI_2 concentration. On the other hand Losac induces t-PA expression. Secretion of collagen and apoptosis protection were observed on fibroblasts treated with rLopap. Finally, to identify the venom proteins related to the human envenomation a proteomic analysis has been performed using 2D electrophoresis and Mass Spectrometry.

Supported by FAPESP, CNPq, COINFAR

.