

## Accepted Manuscript

Title: Interaction of a snake venom L-amino acid oxidase with different cell types membrane

Author: Zaineb Abdelkafi-Koubaa Imen Aissa Maram Morjen  
Nadia Kharrat Mohamed EL Ayeb Youssef Gargouri Najet  
Srairi-Abid Naziha Marrakchi



PII: S0141-8130(15)00680-7  
DOI: <http://dx.doi.org/doi:10.1016/j.ijbiomac.2015.09.065>  
Reference: BIOMAC 5401

To appear in: *International Journal of Biological Macromolecules*

Received date: 11-8-2015  
Revised date: 28-9-2015  
Accepted date: 29-9-2015

Please cite this article as: Z. Abdelkafi-Koubaa, I. Aissa, M. Morjen, N. Kharrat, M.E.L. Ayeb, Y. Gargouri, N. Srairi-Abid, N. Marrakchi, Interaction of a snake venom L-amino acid oxidase with different cell types membrane , *International Journal of Biological Macromolecules* (2015), <http://dx.doi.org/10.1016/j.ijbiomac.2015.09.065>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## 1 Interaction of a snake venom L-amino acid oxidase with different cell types membrane

2  
3 Zaineb ABDELKAFI-KOUBAA<sup>1</sup>, Imen AISSA<sup>2</sup>, Maram MORJEN<sup>1</sup>, Nadia KHARRAT<sup>2</sup>,  
4 Mohamed EL AYEB<sup>1</sup>, Youssef GARGOURI<sup>2</sup>, Najet SRAIRI-ABID<sup>1</sup>, Naziha  
5 MARRAKCHI<sup>1,3</sup>.

6  
7 <sup>1</sup>Laboratoire des Venins et Biomolécules Thérapeutiques LR11IPT08, Institut Pasteur de Tunis,  
8 13, Place Pasteur, 1002 Tunis, Université de Tunis el Manar, 1068 Tunis, Tunisie.

9 <sup>2</sup>Laboratoire de Biochimie et de Génie Enzymatique des Lipases, Ecole Nationale d'Ingénieurs de  
10 Sfax (ENIS). Route de Soukra, BP 1173, 3038 Sfax, Université de Sfax, Tunisie.

11 <sup>3</sup>Faculté de Médecine de Tunis, 1007 Tunis, Université de Tunis el Manar, 1068 Tunis, Tunisie.

### 12 13 14 **Abstract**

15 Snake venom L-amino acid oxidases are multifunctional enzymes that exhibited a wide range of  
16 pharmacological activities. Although it has been established that these activities are primarily  
17 caused by the H<sub>2</sub>O<sub>2</sub> generated in the enzymatic reaction, the molecular mechanism, however, has  
18 not been fully investigated. In this work, LAAO interaction with cytoplasmic membranes using  
19 different cell types and Langmuir interfacial monolayers was evaluated. The *Cerastes cerastes*  
20 venom LAAO (CC-LAAO) did not exhibit cytotoxic activities against erythrocytes and peripheral  
21 blood mononuclear cells (PBMC). However, CC-LAAO caused cytotoxicity on several cancer cell  
22 lines and induced platelet aggregation in dose-dependent manner. Furthermore, the enzyme  
23 showed remarkable effect against Gram-positive and -negative bacteria. These activities were  
24 inhibited on the addition of catalase or substrate analogs, suggesting that H<sub>2</sub>O<sub>2</sub> liberated is  
25 required for these effects. Binding studies revealed that CC-LAAO binds to the cell surface and  
26 enables the production of highly localized concentration of H<sub>2</sub>O<sub>2</sub> in or near the binding interfaces.  
27 On another hand, the interaction of CC-LAAO with a mimetic phospholipid film was evaluated,  
28 for the first time, using a monomolecular film technique. Results indicated that phospholipid/CC-  
29 LAAO interactions are not involved in their binding to membrane and in their pharmacological  
30 activities.

31 **Key words:** L-amino acid oxidase; phospholipid monolayers; immobilized enzyme; membrane  
32 interaction.

### 33 **Abbreviations:**

34 DiC<sub>12</sub>PC: 1,2-dilauryl-sn-glycero-3-phosphocholine

35 DiC<sub>12</sub>PG: 1,2-dilauryl-sn-glycero-3-phosphatidylglycerol

Download English Version:

<https://daneshyari.com/en/article/8330330>

Download Persian Version:

<https://daneshyari.com/article/8330330>

[Daneshyari.com](https://daneshyari.com)