

Abstract

Rocío Rivera Rodríguez

Determination of the Myotoxic Mechanism of Lys-49 Homologues Phospholipase A<sub>2</sub>  
Extracted from the Snake Venom from *Crotalus atrox* (Western Diamondback  
Rattlesnake)

Some snake venoms are known to have high neurotoxic and myotoxic activity. These venoms contain different molecules, but the ones responsible for these effects are proteins. One of these proteins is the secreted phospholipase A<sub>2</sub> (sPLA<sub>2</sub>); one of the protagonists of that toxicity. In the elapidae family, there is only one family of PLA<sub>2</sub>, the one that coordinates with Ca<sup>2+</sup>; its mechanism of action is thoroughly known. In the viper family, there are two families, the Ca<sup>2+</sup> dependent and the Ca<sup>2+</sup> independent. These two enzymes are known to be homologues and are commonly known as Asp-49 PLA<sub>2</sub> and Lys-49 PLA<sub>2</sub>. The Asp-49 one is the Ca<sup>2+</sup> dependent, since it can coordinate the ion through the negative charged aspartate. The Lys-49 is the Ca<sup>2+</sup> independent, since it cannot coordinate the ion because of its positive charge, but it still hydrolyses the phospholipid. The mechanism of action of this enzyme is still unknown. Understanding this mechanism will be beneficial, since this enzyme has a high cell killing activity, which makes it a great template for modifications. Then, it can possibly be used as a targeted treatment for diseases like cancer, where only a selected group of cells are causing the disease. Currently, we are trying to elucidate its enzymatic mechanism through hydrolysis assays with blood, and muscular tissue.