ID: 610

The Application of Venoms in Cardiovascular Drug Design

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ABSTRACT:

Venom is an offensive and defensive weapon of venomous animals. It's a complex mixture of various compounds, such as proteins, enzymes, ions, biogenic amines, cytolytic peptides, and a vast number of toxins. Most of these materials interfere with important physiological function of cells, therefore are potent to induce specific and diverse pharmacological effects. These properties have made them a great source of research tools and a fundamental base for drug design. For example several reports have indicated that some of these toxins can affect blood and plasma biochemical parameters and can be used as cardiovascular drugs. "Captopril" which is a widely prescribed blood pressure medicine, has been derived from a toxin found in the venom of the Brazilian arrow-head viper "Bothrops jaracusa". Captopril effectively reduces blood pressure by inhibiting the Angiotensin-Converting Enzyme. Another example is a defibrinogenation enzyme identified from venom of "Calloselasma rhodostoma". It's called "Ancord" which is a promising reperfusion agent for the treatment of acute ischemic strok. In addition to anti-hypertensive and anti-coagulant activity, variety of reports showed anti-arrythmic effects which lead to design of other effective drugs. It should be noted that effects of two Iranian snake (Echis carinatus and Cerastes cerastes) venoms on cardiovascular system are under investigation in our department. In this study some cardiovascular therapeutic effects of snake venoms and recently designed venom-based medicines are reviewed.

Key Word: *Venom, Captopril, Ancord, Cardiovascular drug*