Structure Characterization of Some Snake Venom Proteins as Targeted Therapeutics

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Abstract

Introduction: Snake venom (SV) is a rich source of proteins. Many of them are used for their toxicity in the treatment of diseases such as cancer. In the other hand, toxic agents such as immunotoxins have been investigated as a possible therapy for cancer in targeted therapy. They are conjugated proteins comprised of a toxin such as Ribosome Inactivating Proteins (RIPs) along with an antibody or cytokine that specifically bind to target cells. In our earlier study, we suggest using toxins derived from snake venom as toxic moiety in immunotoxin.

Methods and Results: In our earlier report, we structurally compared SVPs with RIPs and suggested SVPs as anticancer agents in immunotoxin therapy. In this study, we selected LAAO, SVMP, disintegrin, PLA2, CVF and CRISP and compared these proteins with each other. We used UniProt and PDB database to discover their sequence and function data. Their structures were constructed through phyre2 server, then compared to other similar peptides. We demonstrated that most of these proteins have low molecular weight and all of them contain several cysteines and are able to make disulfide bonds.

Conclusions:

Novel therapeutics are essential to treat cancer cells. It seems that SVPs are one of the best candidates due to theirs toxic characteristics, some SVPs such as PLA2 and CRISP are smaller than others and have the most disulfide bonds.

Key words: cancer, snake venom, targeting therapy, immunotoxin