Snake Venom is a Cancer Therapy

George Qiao  
*University of Richmond*

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Snake Venom As A Cancer Therapy

Snakes can be deadly for many people each year. For 2019, the estimated number of new cancer cases exceeds 1.5 million, and the estimated number of deaths caused by cancer exceeds six-hundred thousand.1 Treatments for cancer certainly exist; although current treatments are often costly and are not always effective in the long run. The treatments also come with side effects often associated with the destruction of healthy, noncancerous cells. The expansion of alternatives for treating cancer is a constant objective for the medical community, as the destruction of healthy, noncancerous cells.

Several snake venoms have shown that the effects of ROS are more likely to inhibit adhesion, jarahagin can prevent metastasis, and healthy cells. Furthermore, healthy cells were not harmed by the protein. Thus, snake venom lectins can be especially helpful in treating certain types of cancer.

The process of collecting the venom and determining its effects on cancer takes multiple steps. The species of snake from which the venom is collected depends on the proteins of interest, as the type of venom varies among species. It may be easier to collect venom in the summer as opposed to the winter, as the venom is more liquefied in the summer. Once the species is identified and captured, the snake must be kept in conditions suitable for living. A snake can die when kept in conditions unlike its natural habitat, and high occurrences of snake deaths could shift a vulnerable species closer to becoming endangered.1 Once the venom is collected, the proteins must be isolated using various purification techniques, such as size-exclusion, ion exchange, and affinity chromatography. Edman sequencing can be used to determine the sequences of small proteins, if necessary. Once the individual proteins of the venom are identified and isolated, researchers can test the effects of the proteins on cancer cell activity.

The isolation and utilization of snake venom components is a valuable cancer-fighting technique, but it is not without its flaws. The immune system can possibly react to foreign proteins injected into the bloodstream. Immunosuppression may help prevent rejection of the proteins by the immune system, but would also render the body vulnerable to infectious agents. Encapsulation of the proteins in nanocarriers for slow, controlled release of the proteins may help prevent adverse reactions by the immune system.