



DEADLY EFFECTS OF SNAKE VENOM, ITS COMPONENTS AND MEDICINAL PROPERTIES

Karimova Asalkhan

2nd year student of the Faculty of Pharmacy of Samarkand State
Medical University

Sharipov Bobur Salimovich

Scientific supervisor: Assistant teacher of Samarkand State Medical
University <https://orcid.org/0009-0005-9787-8753>
<https://doi.org/10.5281/zenodo.10633593>

Abstract. Snake venom is a complex mixture of proteins and peptides with various biological activities, including neurotoxic, hemotoxic, and cytotoxic effects. Understanding the lethal potential of snake venom is critical to developing effective antivenom treatments and mitigating the effects of snakebite envenomation. This review provides an overview of the composition and mechanism of action of snake venom components, as well as the factors influencing venom lethality. It also discusses current research and developments aimed at expanding our understanding of the lethality of snake venom and improving treatment strategies for snakebite victims.

Key words: snake venom, lethality, envenomation, antivenom therapy, protein composition, venom toxicity, snakebite, venomous snakes, treatment strategies

Introduction

Snake venom is a complex substance used by snakes for predation and defense. It's a highly specialized chemical cocktail that varies widely among snake species. Although the thought of poison may initially cause fear, a thorough understanding of its composition and effects is essential for medical treatment and scientific research. In fact, snake venom is dangerous not only for humans, but for the entire animal world. But when this toxin is properly applied to diseases, it has been found to cure several diseases. In particular: it is effective in thyroid diseases, oncological diseases, neurological diseases, treatment of stomach ulcers, low immunity and various colds, worms in children, complications of COVID-19 and a number of diseases.

The main part

Animal venoms are used as defense mechanisms or to immobilize and digest prey. In fact, toxins are a complex mixture of enzymatic and non-enzymatic components with specific pathophysiological functions. Peptide toxins isolated from animal venoms mainly target ion channels, membrane receptors, and components of the hemostatic system with high selectivity and affinity. This review presents the state-of-the-art research on the pharmacology of snake venom bioactive components and evaluates their therapeutic prospects for a wide range of pathophysiological conditions. Snake venoms have been used medicinally for thousands of years, especially in traditional Chinese medicine.

Consequently, snake venoms can be considered as mini-drug libraries, where each drug is pharmacologically active. However, less than 0.01% of these toxins have been identified and characterized. For example, Captopril® (Enalapril), Integrilin® (Eptifibatide), and Aggrastat® (Tirofiban) are FDA-approved snake venom-based drugs. In addition to these approved drugs, many other components of snake venom are currently in preclinical or

clinical trials for various therapeutic applications. These examples show that snake venom can be a valuable source of new key components in drug discovery.

Analysis and results

Snake venom is a very complex substance and varies in different species of snakes. It contains a mixture of proteins, enzymes, and other bioactive molecules that can have a variety of effects on the human body, including neurotoxicity, cytotoxicity, and hemotoxicity. Analyzing snake venom typically involves identifying and quantifying the components present using techniques such as mass spectrometry, chromatography, and enzyme assays. Researchers can also study the venom's effects on cells and tissues in vitro and in animal models to understand its toxicity and potential therapeutic applications.

The results of these analyzes can provide valuable information about the composition of snake venom, its potential medicinal uses, and the development of anti-venom treatments. This research may help us understand the evolution and ecology of snakes, as well as help us develop new drugs and treatments for various human diseases.

In general, the analysis and results of snake venom studies are very important for the development of science and medicine as well as for the conservation of snake species and their ecosystems.

Composition of snake venom. Snake venom is a combination of proteins, enzymes, peptides and other molecules. These components work together in a coordinated manner to immobilize and digest prey, as well as deter potential predators. The enzymes in the venom are responsible for breaking down tissue and disrupting the victim's normal physiological processes.

It can be said about the types of snake venom that there are four main types according to its effect: neurotoxic, hemotoxic, cytotoxic and myotoxic. Neurotoxic poison affects the nervous system, causing paralysis and respiratory failure. Hemotoxic venom targets the blood and its components, causing tissue damage, clotting disorders, and organ failure. Cytotoxic poison destroys local tissues, causing swelling, pain and necrosis.

Myotoxic venom targets muscle tissue, causing muscle damage and breakdown. Medical applications. Despite its dangerous nature, components of snake venom have been used in medicine. Certain proteins and peptides from snake venom have been studied for their potential in developing drugs for conditions such as high blood pressure, heart disease and chronic pain. Additionally, antivenom, which is produced by capturing and neutralizing the venom of various types of snakes, is needed to treat snakebite victims.

Research and storage. Scientific research on snake venom continues, with a focus on understanding the molecular composition and effects of venom components. This knowledge may aid in the development of new therapeutics and toxicants. In addition, the study of snake venom can contribute to the conservation of snake species, as a better understanding of their venom can help create effective strategies to resolve conflicts between humans and snakes.

Conclusion

Snake venom is a potent and versatile substance with serious implications for human health and ecological systems. Understanding its composition and effects is critical to developing snakebite treatments, as well as harnessing its potential for medical and scientific advances. By entering the world of snake venom, we can appreciate the complexity of nature and unlock its potential for the benefit of humanity.

References:

- 1.Khojimatov Q.M. Olloyorov, M. Yuldashev H.M, Shogulomov U.Sh, Medicinal herbs are a salve for pain (Fitotherapy) Tashkent- 1995 htps://zira.uz~2018.05.10
- 2.First volume Tashkent 2000 Tashkent Kholmatov H.H, Habibov Z.H Farmakagnosia (Textbook) 1980 5.Medicinal herbs 1967 Nabiyev M
- 3.Atlas of medicinal plants Tashkent-2012.
- 4.Mardanovich, M. Z., Aliaskarovna, S. U., Kenjaevna, B. M., Genjebaevna, A. P., & Salimovich, S. B. (2021). Some Considerations about Legal Solutions and Practices of Certain Problems Writing Recipes. Annals of the Romanian Society for Cell Biology, 5341-5352.
- 5.Mukhamadiyeva, M., & Sharipov, B. (2022). LATIN AS THE MAIN LANGUAGE OF MEDICINE. Theoretical aspects in the formation of pedagogical sciences, 1(7), 337-339.
- 6.Salimovich, S. B. (2022). Studies of Reciprocity in Linguistics. Eurasian Scientific Herald, 8, 221-224.
- 7.Шарипов, Б. С. (2022). TIL BIRLIKLARINING NUTQDA FAOLLASHUVI HAQIDA. МЕЖДУНАРОДНЫЙ ЖУРНАЛ ИСКУССТВО СЛОВА, 5(1).
- 8.Maxmudov, Z. M., & Sharipov, B. S. LOTIN TILI VA TIBBIY TERMINOLOGIYA FANINI O'QITISHDA INNOVATION TEXNOLOGIYALARDAN FOYDALANISHNING DIDAKTIK TAMOIYILLARI VA UNING ASOSI HAQIDA FIKRLAR.
- 9.Sharipov, B. (2023). SOME CONSIDERATIONS ON THE FORMATION OF CLINICAL TERMS IN LATIN. International Bulletin of Applied Science and Technology, 3(6), 477-479.
10. Salimovich, S. B. (2022). RECIPROCAL SYMMETRY AND ITS GRAMMATICAL INDICATIONS. EPRA International Journal of Research and Development (IJRD), 7(12), 129-131.
11. Sharipov, B. (2022). RETSIPROKLIK XUSUSIDA MULOHAZALAR. Общественные науки в современном мире: теоретические и практические исследования, 1(19), 63-66.
12. Salimovich, S. B. (2022, January). FUNCTIONS OF LANGUAGE UNITS. In Conference Zone (pp. 62-63).
13. Mardanovich, M. Z., & Salimovich, S. B. Auditoriyadan tashqari ta'lim-tarbiyaga maqsadli, tizimli yondashish. In Конференция состоялась 5 марта 2022 года на базе Ташкентского государственного стоматологического института по адресу: Республика Узбекистан, 100047, г. Ташкент, ул. Махтумкули, 103. Цель конференции–знакомство и обмен опытом в обучении и в работе с цифровыми данными, технологиями их применения в гуманитарных (p. 455).
- 14.Salimovich, S. B. (2024). ANATOMICAL, PHARMACEUTICAL AND CLINICAL TERMINOLOGY IN LATIN CLASSES. Journal of Universal Science Research, 2(1), 483-495.
- 15.Salimovich, S. B. (2024). USE OF LATIN TERMINOLOGY IN THE PROFESSIONAL ACTIVITY OF A DOCTOR (BASED ON THE MATERIAL OF AN OUTPATIENT'S MEDICAL CARD). Multidisciplinary Journal of Science and Technology, 4(1), 276-281.
- 16.Yorova, S. K., & Khakberdiyeva, V. J. K. (2021). DOCTOR AND PATIENT. Scientific progress, 2(1), 1478-1480.
- 17.Yorova, S. (2023). TO STUDY MEDICAL TERMS IN LATIN AND GREEK LANGUAGES. International Bulletin of Engineering and Technology, 3(3), 166-170.
- 18.Yorova, S. K., & Iqbal, I. (2023). HISTORY OF MEDICAL TERMINOLOGY. Journal of Universal Science Research, 1(9), 158-164.

19. Normurodova, S. M., & Yorova, S. K. (2023). Nemis tili frazeologik birikmalari va tilning lug'at boyligi. *Science and Education*, 4(2), 1672-1675.
20. Yorova, S. K. (2017). The concept "health" in the English lingual culture. In *Humanities and Social Sciences in Europe: Achievements and Perspectives* (pp. 58-60).
21. Askarovich, B. S., Karimovna, Y. S., Sobirovich, X. Y., & Bakhodirovna, E. M. (2022). TEACHING MATH IN ENGLISH TO UNIVERSITIES AND INSTITUTIONS' STUDENTS FOR TAKING GMAT CERTIFICATE. *Journal of Positive School Psychology*, 1600-1604.
22. Yorova, S., & Nasirkhan, A. (2023). MODERN APPROACHES TO THE TREATMENT OF TRAUMATOLOGICAL, ORTHOPEDICS AND NEUROSURGICAL DISEASES. Theoretical aspects in the formation of pedagogical sciences, 2(11), 149-152.
23. Karimovna, Y. S., & Holalkere, V. S. (2023). DEMYSTIFYING PHARMACEUTICAL TERMINOLOGY: UNDERSTANDING MEDICINAL FORMS AND FREQUENTLY USED SEGMENTS. *Multidisciplinary Journal of Science and Technology*, 3(4), 10-13.
24. Yorova, S. A. Y. O. R. A., & Nasimova, S. O. H. I. B. A. (2019). The ways of teaching languages at medical institutions.
25. Karimovna, Y. S. (2023). AN INTRODUCTION TO ANATOMICAL HISTOLOGICAL TERMINOLOGY: NOUNS AND THEIR GRAMMAR CATEGORIES. "XXI ASRDA INNOVATION TEXNOLOGIYALAR, FAN VA TA'LIM TARAQQIYOTIDAGI DOLZARB MUAMMOLAR" nomli respublika ilmiy-amaliy konferensiyasi, 1(9), 19-22.
26. Abduvasievna, G. S., Habibdjanovna, B. D., Karimovna, Y. S., Ugli, K. Y. S., Ugli, B. S. A., & Shukhratovna, N. F. (2021). Foreign Language Teachers in the System of Public Education. *Annals of the Romanian Society for Cell Biology*, 7001-7010.
27. Karimovna, Y. S. (2022). STRATEGIC METHODS OF ENGLISH AND UZBEK MEDICAL DISCOURSES. *Thematics Journal of Education*, 7(5).
28. Karimovna, Y. S. (2023). SPECIAL TYPE OF MEDICAL SPEECH IN THE COMMUNICATION PROCESS. *Research Focus International Scientific Journal*, 2(4), 115-120.
29. Karimovna, Y. S., & Rashid, A. (2023, November). ANATOMICAL TERMINOLOGY. In *Konferensiyalar| Conferences* (Vol. 1, No. 1, pp. 101-104).
30. Karimovna, Y. S., & Zara, A. (2023). EXPLORING THE LATIN ROOTS OF CHEMICAL TERMINOLOGY: NAMES OF CHEMICAL ELEMENTS, ACIDS, AND OXIDES. *Yangi O'zbekistonda Tabiiy va Ijtimoiy-gumanitar fanlar respublika ilmiy amaliy konferensiyasi*, 1(7), 8-13.
31. Karimovna, Y. S., & Zulkarnain, S. (2023, November). DEGREES OF COMPARISON OF ADJECTIVES AND COORDINATION WITH NOUNS OF FIFTH DECLENSION. In *Konferensiyalar| Conferences* (Vol. 1, No. 1, pp. 80-82).
32. Karimovna, Y. S. (2022). The linguistic environment in the field of medical communications. *Евразийский журнал академических исследований*, 2(2), 143-147.
33. Karimovna, Y. S. Social-cultural Characteristics of Uzbek and English Medical Speech. *International Journal on Integrated Education*, 4(5), 294-298.
34. Karimovna, Y. S. Medicine and Education faculty Samarkand State Medical Institute.
35. Karimovna, Y. S., & Farxodovna, R. K. VISION. THE MAIN VISUAL IMPAIRMENT IN ADOLESCENTS. *Zbiór artykułów naukowych recenzowanych.*, 45.
36. Ученых, Е. С. 12 (69), 2019 LEARNING FOREIGN LANGUAGES FOR MEDICAL INSTITUTIONS Nuritdinova Zulkhumor Shamsievna Head of Chair in Samarkand State Medical Institute. Yorova Sayora Karimovna English teacher of Samarkand State Medical Institute, 9, 26.

- 37.Karimovna, Y. S., Erkinovna, T. N., & Agwan, A. (2023). MODERN EDUCATION AND CULTURAL DEVELOPMENT NURTURING GLOBAL CITIZENS IN THE 21ST CENTURY. EPRA International Journal of Multidisciplinary Research (IJMR), 9(11), 292-294.
- 38.Karimovna, Y. S. (2020). COMMUNICATIVE COMPETENCE OF A SPECIALIST. European Journal of Research and Reflection in Educational Sciences Vol, 8(4).
- 39.Karimovna, Y. S., & Sachdeva, L. (2023). DIFFERENT APPROACHES AND ISSUES OF TEACHING FOREIGN LANGUAGE IN CONTEXT OF GLOBALIZATION. TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI, 3(5), 226-229.
- 40.Karimovna, Y. S., & Farxodovna, R. K. THE EFFECT OF SLEEP ON STUDENT PERFORMANCE. Zbiór artykułów naukowych recenzowanych., 26.
- 41.Shamsievna, N. Z., & Karimovna, Y. S. LEARNING FOREIGN LANGUAGES FOR MEDICAL INSTITUTIONS. ЕВРАЗИЙСКИЙ СОЮЗ УЧЕНЫХ (ЕСУ), 32.
- 42.Karimovna, Y. S. (2020). English and Uzbek medical conversation between doctor and patient (Analysis from a linguistic point of view). Journal of Critical Reviews, 7(5), 292-294.
- 43.Ёрова, С. (2023). Коммуникатив хатти-ҳаракатлар прагмалингвистика, маданиятлараро прагматика. Общество и инновации, 4(7/S), 276-282.
- 44.Ёрова, С. (2023). ТИББИЙ НУТҚНИНГ ИЖТИМОЙ-МАДАНИЙ АСОСЛАРИ. Общественные науки в современном мире: теоретические и практические исследования, 2(1), 35-38.
- 45.Ёрова, С. К. (2022). Бевосита тиббиётнинг касб компетенцияси ва унинг деонтологик асослари. Science and Education, 3(12), 212-218.
- 46.Ёрова, С. К. (2023). ТИББИЙ НУТҚНИНГ КОГНИТИВ, МАДАНИЙ ВА ПРАГМАТИК ХУСУСИЯТЛАРИ. IJTIMOIIY FANLARDA INNOVASIYA ONLAYN ILMIY JURNALI, 3(2), 219-223.
- 47.Karimovna, Y. S., & Shahbaz, Z. (2024). GENERAL IDEA, WORD FORMATION, GREEK SUFFIXES AND PREFIXES. Multidisciplinary Journal of Science and Technology, 4(1), 270-275.
- 48.Mardanovich, M. Z. (2023). LOTIN TILINING ZAMONAVIY TILLARGA BEVOSITA VA BILVOSITA TA'SIRI. Research Focus International Scientific Journal, 2(6), 132-136.
- 49.Mardanovich, M. Z. (2022). The place of problematic and heuristic methods in the process of teaching latin and medical terminology.
- 50.Maxmudov, Z. M. Lotin tili va tibbiyot terminologiyasi fanini o'qitishda zamonaviy pedagogik texnologiyalardan unumli foydalanish istiqbollari. Urganch davlat universiteti, "Ilm sarchashmalari, 118-120.