

TABLE OF CONTENTS – Handbook of Venoms and Toxins of Reptiles

Preface

ABOUT THE EDITOR

Contributors

Section I: Introduction and Technologies Used in Toxinology

1. Reptile venoms and toxins: Unlimited opportunities for basic and applied research – Stephen P. Mackessy
2. Present and future of snake venom proteomics profiling – Juan J. Calvete and Bruno Lomonte
3. Applications of genomics and related technologies for studying reptile venoms – Drew R. Schield, Blair W. Perry, Giulia I.M. Pasquesi, Richard W. Orton, Zachary L. Nikolakis, Aundrea K. Westfall, Todd A. Castoe
4. Snake venom gland transcriptomics – Cassandra M. Modahl and Rajeev Kungur Brahma
5. X-ray crystallography and structural studies of toxins – Vinícius Lucatelle da Silva, Ricardo Barros Mariutti, Mônica Aparecida Coronado, Raphael Josef Eberle, Fábio Rogério de Moraes and Raghuvir Krishnaswamy Arni
6. Envenomations and Treatment: Translating between the bench and the bedside – Nicklaus Brandehoff and Jordan Benjamin
7. Current assessment of the state of snake venom toxinological research with a view to the future – Sarah Natalie Cirilo Gimenes and Jay W. Fox

Section II: Venom Gland Structure, Systematics and Ecology

8. Reptile venom glands: Form, function, future, concepts and controversies – Scott A. Weinstein
9. Advances in venomous snake systematics, 2009-2019 - Wolfgang Wüster
10. Biochemical ecology of venomous snakes – Cara F. Smith and Stephen P. Mackessy
11. Resistance of native species to reptile venoms — Danielle H. Drabeck

Section III: Reptile Venom Non-enzymatic Toxins

12. Three-finger toxins – Rajeev Kungur Brahma, Cassandra M. Modahl and R. Manjunatha Kini
13. Myotoxin a, crotamine and defensin homologs in reptile venoms – Lucas C. Porta, Pedro Z. Amaral, Paulo Z. Amaral and Mirian A. F. Hayashi
14. Reptile venom disintegrins – Anthony J. Saviola and Juan J. Calvete
15. Reptile venom cysteine-rich secretory proteins – María Elisa Peichoto and Marcelo Larami Santoro
16. Bradykinin-potentiating and related peptides from reptile venoms - Daniel Carvalho Pimenta and Patrick Jack Spencer
17. Exendins and its related proteins – Michelle Khai Khun Yap and Nurhamimah Misuan
18. Reptile venom C-type-lectins – Kenneth J. Clemetson
19. Snake venom Kunitz-type inhibitors and cystatins – structure and function – Elda E. Sánchez, Emelyn Salazar, Montamas Suntravat and Francisco Torres
20. Small molecular constituents of snake venoms – Alejandro Villar-Briones and Steven D. Aird
21. Cobra venom factor: Structure, function, biology, research tool and drug lead – Carl-Wilhelm Vogel, Brian E. Hew and David C. Fritzinger
22. Snake toxins targeting diverse ion channels - Matan Geron and Avi Priel

Section IV: Reptile Venom Enzyme Toxins

23. Thrombin-like serine proteinases in reptile venoms – Stephen D. Swenson, Samantha Stack
and Francis S. Markland Jr.
24. Snake venom metalloproteinases – Charlotte A. Dawson, Stuart Ainsworth, Laura-Oana Albuлесcu and Nicholas R. Casewell
25. Snake venom matrix metalloproteinases (svMMPs): Alternative proteolytic enzymes in rear-fanged snake venoms – Inácio L. M. Junqueira-de-Azevedo and Juan David Bayona-Serrano
26. Snake venom phospholipase A₂ toxins – Bruno Lomonte and Igor Križaj

27. Reptile venom L-amino acid oxidases – structure and function – Juliana P. Zuliana, Mauro V. Paloschi, Adriana S. Pontes, Charles N. Boeno, Jéssica A. Lopes, Sulamita S. Setubal, Fernando B. Zanchi and Andreimar M. Soares

28. Snake venom nucleases, nucleotidases, and phosphomonoesterases - Jüri Siigur and Ene Siigur

29. Reptile venom acetylcholinesterases - Mushtaq Ahmed, Wasim Ahmad, Nadia Mushtaq,

Rehmat Ali Khan and Maria Rosa Chitolina Schetinger

30. Inhibitors of reptile venom toxins – Ana F. Gómez Garay, Jorge J. Alfonso, Anderson M. Kayano, Juliana C. Sobrinho, Cleopatra A. S. Caldeira, Rafaela Diniz-Sousa, Fernando B. Zanchi, Juliana P. Zuliani, and Andreimar M. Soares

Section V: Global Approaches to Envenomations and Treatments

31. Snakebite envenomation as a neglected tropical disease: new impetus for confronting an old scourge – José María Gutiérrez

32. Current industrial production of snake antivenoms – Mariángela Vargas, Melvin Sánchez, Andrés Hernández, Aarón Gómez, Mauricio Arguedas, Andrés Sánchez, Laura Sánchez, Mauren Villalta, María Herrera and Álvaro Segura

33. Antivenom in the age of recombinant DNA technology – Andreas H. Laustsen

34. Epidemiology and treatment of reptile envenomations in the United States – Daniel E. Keyler and Nicklaus Brandehoff

35. Envenomations by reptiles in México – Edgar Neri-Castro, Melisa Bénard-Valle, Jorge López de León, Leslie Boyer and Alejandro Alagón

36. Snakebite envenomation in Central America: Epidemiology, pathophysiology and treatment – José María Gutiérrez

37. Snakebite in Southeast Asia: Envenomation and clinical management– Nget Hong Tan, Kae Yi Tan and Choo Hock Tan

38. Snake envenomation: Therapy and challenges in India – Ashis K. Mukherjee, Bhargab Kalita, Sumita Dutta, Aparup Patra, Chitta R. Maiti and Dileep Punde

39. Snakebite in Africa: Current situation and urgent needs – Jean-Philippe Chippaux

40. Approaches to snake envenomation in Southern Africa - James Pattinson, George Oosthuizen, Colin R. Tilbury and Darryl Wood

Section VI: Reptile Venoms – Production and as a Source of Therapeutics

41. Large-scale snake colonies for venom production: Considerations and challenges
– Kristen L. Wiley and James R. Harrison

42. Toxins to drugs – biochemistry and pharmacology – Zoltan Takacs.