DAFTAR PUSTAKA

Adisakwattana, P., Chanhome, L., Chaiyabutr, N., Phuphisut, O., Reamtong, O., & Thawornkuno, C. (2023). Venom-gland transcriptomics of the Malayan pit viper (Calloselasma rhodostoma) for identification, classification, and characterization of venom proteins. *Heliyon*, *9*(5), e15476. https://doi.org/10.1016/j.heliyon.2023.e15476

Adiwinata, R., & Nelwan, E. J. (2015). Snakebite in Indonesia. *Acta Medica Indonesiana: The Indonesian Journal of Internal Medicine*, 47(4), 358–365

Albulescu, L.-O., Hale, M. S., Ainsworth, S., Alsolaiss, J., Crittenden, E., Calvete, J. J., Evans, C., Wilkinson, M. C., Harrison, R. A., Kool, J., & Casewell, N. R. (2020). Preclinical validation of a repurposed metal chelator as an early-intervention therapeutic for hemotoxic snakebite. *Science Translational Medicine*, *12*(542), eaay8314. https://doi.org/10.1126/scitranslmed.aay8314

Albuquerque Barbosa, F. B., Raad, R. D. S., Santos Ibiapina, H. N., Freire Dos Reis, M., Neves, J. C. F., Andrade, R. V., Nascimento, T. P., Valle, F. F., Casewell, N. R., Sachett, J., Sartim, M. A., Monteiro, W., Costa, A. G., & Lima Ferreira, L. C. (2024). Dermatopathological findings of Bothrops atrox snakebites: A case series in the Brazilian Amazon. *PLOS Neglected Tropical Diseases*, *18*(12), e0012704. https://doi.org/10.1371/journal.pntd.0012704

Alcoba, G., Sharma, S. K., Bolon, I., Ochoa, C., Babo Martins, S., Subedi, M., Shah, B., Ghimire, A., Gignoux, E., Luquero, F., Ruiz De Castañeda, R., Ray, N., & Chappuis, F. (2022). Snakebite epidemiology in humans and domestic animals across the Terai region in Nepal: A multicluster random survey. *The Lancet Global Health*, *10*(3), e398–e408. https://doi.org/10.1016/S2214-109X(22)00028-6

Alencar, L. R., Martins, M., & Greene, H. W. (2018). Evolutionary History of Vipers. In Wiley, *Encyclopedia of Life Sciences* (1st ed., pp. 1–10). Wiley. https://doi.org/10.1002/9780470015902.a0027455

Almeida, M. T. D., Freitas-de-Sousa, L. A., Colombini, M., Gimenes, S. N. C., Kitano, E. S., Faquim-Mauro, E. L., Serrano, S. M. T., & Moura-da-Silva, A. M. (2020). Inflammatory Reaction Induced by Two Metalloproteinases Isolated from Bothrops atrox Venom and by Fragments Generated from the Hydrolysis of Basement Membrane Components. *Toxins*, *12*(2), 96. https://doi.org/10.3390/toxins12020096

Alsolaiss, J., Leeming, G., Da Silva, R., Alomran, N., Casewell, N. R., Habib, A. G., Harrison, R. A., & Modahl, C. M. (2024). Investigating Snake-Venom-Induced Dermonecrosis and Inflammation Using an Ex Vivo Human Skin Model. *Toxins*, *16*(6), 276. https://doi.org/10.3390/toxins16060276

Amirrah, I. N., Lokanathan, Y., Zulkiflee, I., Wee, M. F. M. R., Motta, A., & Fauzi, M. B. (2022). A Comprehensive Review on Collagen Type I Development of Biomaterials for Tissue Engineering: From Biosynthesis to Bioscaffold. *Biomedicines*, *10*(9), 2307. https://doi.org/10.3390/biomedicines10092307

Anandappa, G., & Chau, I. (2017). Emerging Novel Therapeutic Agents in the Treatment of Patients with Gastroesophageal and Gastric Adenocarcinoma. *Hematology/Oncology Clinics of North America*, *31*(3), 529–544. https://doi.org/10.1016/j.hoc.2017.02.001

Arias, A. S., Rucavado, A., & Gutiérrez, J. M. (2017). Peptidomimetic hydroxamate metalloproteinase inhibitors abrogate local and systemic toxicity induced by Echis ocellatus (saw-scaled) snake venom. *Toxicon*, *132*, 40–49. https://doi.org/10.1016/j.toxicon.2017.04.001

Asega, A. F., Menezes, M. C., Trevisan-Silva, D., Cajado-Carvalho, D., Bertholim, L., Oliveira, A. K., Zelanis, A., & Serrano, S. M. T. (2020). Cleavage of proteoglycans, plasma proteins and the platelet-derived growth factor receptor in the hemorrhagic process induced by snake venom metalloproteinases. *Scientific Reports*, *10*(1), 12912. https://doi.org/10.1038/s41598-020-69396-y

Attarde, S., Iyer, A., Khochare, S., Shaligram, U., Vikharankar, M., & Sunagar, K. (2022). The Preclinical Evaluation of a Second-Generation Antivenom for Treating Snake Envenoming in India. *Toxins*, *14*(3), 168. https://doi.org/10.3390/toxins14030168

Ayvazyan, N., Ghukasyan, G., Ghulikyan, L., Kirakosyan, G., Sevoyan, G., Voskanyan, A., & Karabekyan, Z. (2022). The Contribution of Phospholipase A2 and Metalloproteinases to the Synergistic Action of Viper Venom on the Bioenergetic Profile of Vero Cells. *Toxins*, *14*(11), 724. https://doi.org/10.3390/toxins14110724

Baldo, C., Jamora, C., Yamanouye, N., Zorn, T. M., & Moura-da-Silva, A. M. (2010). Mechanisms of Vascular Damage by Hemorrhagic Snake Venom Metalloproteinases: Tissue Distribution and In Situ Hydrolysis. *PLoS Neglected Tropical Diseases*, *4*(6), e727. https://doi.org/10.1371/journal.pntd.0000727

Bartlett, K. E., Hall, S. R., Rasmussen, S. A., Crittenden, E., Dawson, C. A., Albulescu, L.-O., Laprade, W., Harrison, R. A., Saviola, A. J., Modahl, C. M., Jenkins, T. P., Wilkinson, M. C., Gutiérrez, J. M., & Casewell, N. R. (2024). Dermonecrosis caused by a spitting cobra snakebite results from toxin potentiation and is prevented by the repurposed drug varespladib. *Proceedings of the National Academy of Sciences*, *121*(19), e2315597121. https://doi.org/10.1073/pnas.2315597121

Bertholim, L., Chaves, A. F. A., Oliveira, A. K., Menezes, M. C., Asega, A. F., Tashima, A. K., Zelanis, A., & Serrano, S. M. T. (2021). Systemic Effects of Hemorrhagic Snake Venom Metalloproteinases: Untargeted Peptidomics to Explore the Pathodegradome of Plasma Proteins. *Toxins*, *13*(11), 764. https://doi.org/10.3390/toxins13110764

Bittenbinder, M. A., Van Thiel, J., Cardoso, F. C., Casewell, N. R., Gutiérrez, J.-M., Kool, J., & Vonk, F. J. (2024). Tissue damaging toxins in snake venoms: Mechanisms of action, pathophysiology and treatment strategies. *Communications Biology*, *7*(1), 358. https://doi.org/10.1038/s42003-024-06019-6

Brown, T. M., & Krishnamurthy, K. (2025). Histology, Dermis. In *StatPearls*. StatPearls Publishing. http://www.ncbi.nlm.nih.gov/books/NBK535346/

Cabral-Pacheco, G. A., Garza-Veloz, I., Castruita-De La Rosa, C., Ramirez-Acuña, J. M., Perez-Romero, B. A., Guerrero-Rodriguez, J. F., Martinez-Avila, N., & Martinez-Fierro, M. L. (2020). The Roles of Matrix Metalloproteinases and Their Inhibitors in Human Diseases. *International Journal of Molecular Sciences*, *21*(24), 9739. https://doi.org/10.3390/ijms21249739

Calabro, K., Curtis, A., Galarneau, J.-R., Krucker, T., & Bigio, I. J. (2011). Gender variations in the optical properties of skin in murine animal models. *Journal of Biomedical Optics*, *16*(1), 011008. https://doi.org/10.1117/1.3525565

Calhelha, R. C., Haddad, H., Ribeiro, L., Heleno, S. A., Carocho, M., & Barros, L. (2023). Inflammation: What's There and What's New? *Applied Sciences*, *13*(4), 2312. https://doi.org/10.3390/app13042312

Castro, A. C., Escalante, T., Rucavado, A., & Gutiérrez, J. M. (2021). Basement membrane degradation and inflammation play a role in the pulmonary hemorrhage induced by a P-III snake venom metalloproteinase. *Toxicon*, *197*, 12–23. https://doi.org/10.1016/j.toxicon.2021.04.012

Cedro, R. C. A., Menaldo, D. L., Costa, T. R., Zoccal, K. F., Sartim, M. A., Santos-Filho, N. A., Faccioli, L. H., & Sampaio, S. V. (2018). Cytotoxic and inflammatory potential of a phospholipase A2 from Bothrops jararaca snake venom. *Journal of Venomous Animals and Toxins Including Tropical Diseases*, *24*(1), 33. https://doi.org/10.1186/s40409-018-0170-y

Chen, Y.-L., Su, L.-L., Liu, H., Zhang, T.-B., Li, G., Sun, L.-C., Lin, D., Jin, T., Zhang, L.-J., & Cao, M.-J. (2025). Synergistic effects of matrix metalloproteinases on the degradation of collagen in abalone (Haliotis discus hannai). *Food Chemistry*, *473*, 143111. https://doi.org/10.1016/j.foodchem.2025.143111

Cheng, H., Hao, B., Sun, J., & Yin, M. (2020). C-Terminal Cross-Linked Telopeptides of Type II Collagen as Biomarker for Radiological Knee Osteoarthritis: A Meta-Analysis. *CARTILAGE*, *11*(4), 512–520. https://doi.org/10.1177/1947603518798884

Chinnasamy, S., Nagamani, S., & Muthusamy, K. (2015). Zn^{2+} ion of the snake venom metalloproteinase (SVMP) plays a critical role in ligand binding: A molecular dynamics simulation study. *RSC Advances*, *5*(86), 70566–70576. https://doi.org/10.1039/C5RA14693C

Chowdhury, A., Lewin, M. R., Zdenek, C. N., Carter, R., & Fry, B. G. (2021). The Relative Efficacy of Chemically Diverse Small-Molecule Enzyme-

Inhibitors Against Anticoagulant Activities of African Spitting Cobra (Naja Species) Venoms. *Frontiers in Immunology*, *12*, 752442. https://doi.org/10.3389/fimmu.2021.752442

Citarella, A., Moi, D., Pinzi, L., Bonanni, D., & Rastelli, G. (2021). Hydroxamic Acid Derivatives: From Synthetic Strategies to Medicinal Chemistry Applications. *ACS Omega*, *6*(34), 21843–21849. https://doi.org/10.1021/acsomega.1c03628

Cox, M. J., Hoover, M. F., Lawan, C., & Kumthorn, T. (2012). *The snakes of Thailand*. Chulalongkorn University Museum of National History.

Da Silva Fernandes Ribas, A., De Godoi, K. S., Sant'Anna, S. S., Da Rocha, M. M. T., & Da Silva, W. D. (2025). Release of Cytokines in the Peritoneal Fluid of C57BL/6 Mice After Bothrops jararaca and Bothrops atrox Venom Injection. *Toxins*, *17*(4), 164. https://doi.org/10.3390/toxins17040164

Dafa, M. H., & Suyanto, S. (2021). Kasus Gigitan Ular di Indonesia. *Jurnal Pengabdian Masyarakat MIPA Dan Pendidikan MIPA*, *5*(1), 47–52. https://doi.org/10.21831/jpmmp.v5i1.29343

Das, I., Ahmed, N., & Liat, L. B. (2015). Venomous Terrestrial Snakes of Malaysia: Their Identity and Biology. In P. Gopalakrishnakone, A. Faiz, R. Fernando, C. A. Gnanathasan, A. G. Habib, & C.-C. Yang (Eds.), *Clinical Toxinology in Asia Pacific and Africa* (pp. 53–69). Springer Netherlands. https://doi.org/10.1007/978-94-007-6386-9_5

De Silva, H. A., Ryan, N. M., & De Silva, H. J. (2016). Adverse reactions to snake antivenom, and their prevention and treatment. *British Journal of Clinical Pharmacology*, *81*(3), 446–452. https://doi.org/10.1111/bcp.12739

Debes, G. F., & McGettigan, S. E. (2019). Skin-Associated B Cells in Health and Inflammation. *The Journal of Immunology*, *202*(6), 1659–1666. https://doi.org/10.4049/jimmunol.1801211

Eulálio, M. D. M. C., Bariani, C. D. O., Ferreira E Ferreira, A. A., De Lima, A. N. B., Santana, H. M., Paloschi, M. V., Setúbal, S. D. S., Cruz, L. F., Tavares, K. M., Da Silva, C. P., Silva, M. D. S., Boeno, C. N., Rita, P. H. S., Soares, A. M., Salvador, D. P. M., & Zuliani, J. P. (2025). Histopathological alterations, local hemorrhage and myotoxic effects induced by Bothrops mattogrossensis venom and an acidic isolated phospholipase A_2. *Acta Tropica*, *271*, 107891. https://doi.org/10.1016/j.actatropica.2025.107891

Fernández C, E. A., & Youssef, P. (2023). Snakebites in the Americas: A Neglected Problem in Public Health. *Current Tropical Medicine Reports*, *11*(1), 19–27. https://doi.org/10.1007/s40475-023-00309-5

Freitas-de-Sousa, L. A., Colombini, M., Lopes-Ferreira, M., Serrano, S. M. T., & Moura-da-Silva, A. M. (2017). Insights into the Mechanisms Involved in Strong Hemorrhage and Dermonecrosis Induced by Atroxlysin-Ia, a PI-Class Snake Venom Metalloproteinase. *Toxins*, *9*(8), 239. https://doi.org/10.3390/toxins9080239

Ghosh, S., Mondal, S. K., & Hembram, P. S. (2024). Gross and Histopathological Dermal Changes at Sites of Snakebite – Report from Autopsy Series. *International Journal of Human and Health Sciences (IJHHS)*, *8*(2), 132. https://doi.org/10.31344/ijhhs.v8i2.633

Gushiken, L. F. S., Beserra, F. P., Bastos, J. K., Jackson, C. J., & Pellizzon, C. H. (2021). Cutaneous Wound Healing: An Update from Physiopathology to Current Therapies. *Life*, *11*(7), 665. https://doi.org/10.3390/life11070665

Gutiérrez, J., Escalante, T., Rucavado, A., Herrera, C., & Fox, J. (2016). A Comprehensive View of the Structural and Functional Alterations of Extracellular Matrix by Snake Venom Metalloproteinases (SVMPs): Novel Perspectives on the Pathophysiology of Envenoming. *Toxins*, *8*(10), 304. https://doi.org/10.3390/toxins8100304

Gutiérrez, J. M., Escalante, T., Rucavado, A., & Herrera, C. (2016). Hemorrhage Caused by Snake Venom Metalloproteinases: A Journey of Discovery and Understanding. *Toxins*, *8*(4), 93. https://doi.org/10.3390/toxins8040093

Guzik, T. J., Skiba, D. S., Touyz, R. M., & Harrison, D. G. (2017). The role of infiltrating immune cells in dysfunctional adipose tissue. *Cardiovascular Research*, *113*(9), 1009–1023. https://doi.org/10.1093/cvr/cvx108

H. Toyama, M., R.C. Costa, C., N. Belchor, M., P. Novaes, D., A. De Oliveira, M., Ie, R., Hessel Gaeta, H., & De O. Toyama, D. (2022). Edema Induced by sPLA2 from *Crotalus durissus terrificus* Involves PLC and PKC Signaling, Activation of cPLA2, and Oxidative Stress. In V. Kumar, A. Aguilera Salgado, & S. Shamsadin Athari (Eds.), *Inflammation in the 21st Century*. IntechOpen. https://doi.org/10.5772/intechopen.80848

Haidar, I. K. A., Chowdhury, M. A. W., Miah, M., Hasan, M., Sohan, M. S. R., Noman, M., Rahman, Md. M., Auawal, A., Rudra, S., Islam, Md. R., Uddin, Md. A., Sayeed, A. A., Ghose, A., Islam, M. M., & Reza, M. A. (2024). Toxins profiles, toxicological properties, and histological alteration potentiality of Trimeresurus erythrurus venom: In vitro and in vivo experiments. *Journal of King Saud University - Science*, *36*(5), 103150. https://doi.org/10.1016/j.jksus.2024.103150

Hasan, R., Manik, H., Rahman, M. A., Shathi, J. H., Islam, M. T., Biswas, M. S., & Hoque, K. Md. F. (2025). Biochemical and Biological Profiles of Bangladeshi Russell's Viper Snake Venom and Neutralizing Efficacy by Indian VINS Polyvalent Antivenom. *Journal of Toxicology*, *2025*(1), 5464388. https://doi.org/10.1155/jt/5464388

Herrera, C., Escalante, T., Voisin, M.-B., Rucavado, A., Morazán, D., Macêdo, J. K. A., Calvete, J. J., Sanz, L., Nourshargh, S., Gutiérrez, J. M., & Fox, J. W. (2015). Tissue Localization and Extracellular Matrix Degradation by PI, PII and PIII Snake Venom Metalloproteinases: Clues on the Mechanisms of Venom-Induced Hemorrhage. *PLOS Neglected Tropical Diseases*, *9*(4), e0003731. https://doi.org/10.1371/journal.pntd.0003731

Herrera, C., Macêdo, J. K. A., Feoli, A., Escalante, T., Rucavado, A., Gutiérrez, J. M., & Fox, J. W. (2016). Muscle Tissue Damage Induced by the Venom of Bothrops asper: Identification of Early and Late Pathological Events through Proteomic Analysis. *PLOS Neglected Tropical Diseases*, *10*(4), e0004599. https://doi.org/10.1371/journal.pntd.0004599

Herrera, C., Voisin, M.-B., Escalante, T., Rucavado, A., Nourshargh, S., & Gutiérrez, J. M. (2016). Effects of PI and PIII Snake Venom Haemorrhagic Metalloproteinases on the Microvasculature: A Confocal Microscopy Study on the Mouse Cremaster Muscle. *PLOS ONE*, *11*(12), e0168643. https://doi.org/10.1371/journal.pone.0168643

Jayadev, R., & Sherwood, D. R. (2017). Basement membranes. *Current Biology*, *27*(6), R207–R211. https://doi.org/10.1016/j.cub.2017.02.006

Jenkins, T. P., Sánchez, A., Segura, Á., Vargas, M., Herrera, M., Stewart, T. K., León, G., & Gutiérrez, J. M. (2017). An improved technique for the assessment of venom-induced haemorrhage in a murine model. *Toxicon*, *139*, 87–93. https://doi.org/10.1016/j.toxicon.2017.10.005

Kadafi, Kadafi, A. M., Hamidy, A., & Kurniawan, N. (2018). The Morphological Characters of The Malayan Pit Viper Calloselasma rhodostoma (Kuhl, 1824): On The Cephalic Scalation and Distribution Status in Indonesia. *The Journal of Experimental Life Sciences*, *8*(3), 193–201. https://doi.org/10.21776/ub.jels.2018.008.03.10

Kandiwa, E., Mushonga, B., Samkange, A., & Fabiano, E. (2018). Quantitative Characterization of the Hemorrhagic, Necrotic, Coagulation-Altering Properties and Edema-Forming Effects of Zebra Snake (*Naja nigricincta nigricincta*) Venom. *Journal of Toxicology*, *2018*, 1–8. https://doi.org/10.1155/2018/6940798

Kapoor, C., Vaidya, S., Wadhwan, V., Hitesh, Kaur, G., & Pathak, A. (2016). Seesaw of matrix metalloproteinases (MMPs). *Journal of Cancer Research and Therapeutics*, *12*(1), 28. https://doi.org/10.4103/0973-1482.157337

Kapurniotu, A., Gokce, O., & Bernhagen, J. (2019). The Multitasking Potential of Alarmins and Atypical Chemokines. *Frontiers in Medicine*, *6*, 3. https://doi.org/10.3389/fmed.2019.00003

Khatibi, M., Almeida, J. R., Gilabadi, S., Ramírez, D., Valenzuela-Hormazábal, P., Patel, K., & Vaiyapuri, S. (2025). Differential Effects of Marimastat and Prinomastat on the Metalloprotease Activity of Various Snake Venoms. *Toxins*, *17*(12), 571. https://doi.org/10.3390/toxins17120571

Khimmaktong, W., Nuanyaem, N., Lorthong, N., Hodgson, W. C., & Chaisakul, J. (2022). Histopathological Changes in the Liver, Heart and Kidneys Following Malayan Pit Viper (Calloselasma rhodostoma) Envenoming and the Neutralising Effects of Hemato Polyvalent Snake Antivenom. *Toxins*, *14*(9), 601. https://doi.org/10.3390/toxins14090601

Khourcha, S., Hilal, I., Elbejjaj, I., Karkouri, M., Safi, A., Hmyene, A., & Oukkache, N. (2023). Insight into the Toxicological and Pathophysiological Effects of Moroccan Vipers' Venom: Assessing the Efficacy of Commercial Antivenom for Neutralization. *Tropical Medicine and Infectious Disease*, *8*(6), 302. https://doi.org/10.3390/tropicalmed8060302

Kini, R., & Koh, C. (2016). Metalloproteases Affecting Blood Coagulation, Fibrinolysis and Platelet Aggregation from Snake Venoms: Definition and Nomenclature of Interaction Sites. *Toxins*, *8*(10), 284. https://doi.org/10.3390/toxins8100284

Kondo, H., Kondo, S., Ikezawa, H., Murata, R., & Ohsaka, A. (1960). STUDIES ON THE QUANTITATIVE METHOD FOR DETERMINATION OF HEMORRHAGIC ACTIVITY OF HABU SNAKE VENOM. *Japanese Journal of Medical Science and Biology*, *13*(1–2), 43–51. https://doi.org/10.7883/yoken1952.13.43

Kontogiorgis, C. A., Papaioannou, P., & Hadjipavlou-Litina, D. J. (2012). Matrix Metalloproteinase Inhibitors: A Review on Pharmacophore Mapping and (Q)SARs Results. In Atta-ur-Rahman, A. B. Reitz, & M. Iqbal Choudhary (Eds.), *Frontiers in Medicinal Chemistry—(Volume 4)* (pp. 424–462). BENTHAM SCIENCE PUBLISHERS. https://doi.org/10.2174/978160805207310904010424

Kunalan, S., Othman, I., Syed Hassan, S., & Hodgson, W. C. (2018). Proteomic Characterization of Two Medically Important Malaysian Snake Venoms, Calloselasma rhodostoma (Malayan Pit Viper) and Ophiophagus hannah (King Cobra). *Toxins*, *10*(11), 434. https://doi.org/10.3390/toxins10110434

Laronha, H., Carpinteiro, I., Portugal, J., Azul, A., Polido, M., Petrova, K. T., Salema-Oom, M., & Caldeira, J. (2020). Challenges in Matrix Metalloproteinases Inhibition. *Biomolecules*, *10*(5), 717. https://doi.org/10.3390/biom10050717

Layfield, H. J., Williams, H. F., Ravishankar, D., Mehmi, A., Sonavane, M., Salim, A., Vaiyapuri, R., Lakshminarayanan, K., Vallance, T. M., Bicknell, A. B., Trim, S. A., Patel, K., & Vaiyapuri, S. (2020). Repurposing Cancer Drugs Batimastat and Marimastat to Inhibit the Activity of a Group I Metalloprotease from the Venom of the Western Diamondback Rattlesnake, Crotalus atrox. *Toxins*, *12*(5), 309. https://doi.org/10.3390/toxins12050309

Lee, L. P., Tan, K. Y., & Tan, C. H. (2020). Toxicity and cross-neutralization of snake venoms from two lesser-known arboreal pit vipers in Southeast Asia: Trimeresurus wiroti and Trimeresurus puniceus. *Toxicon*, *185*, 91–96. https://doi.org/10.1016/j.toxicon.2020.06.012

Lertsakulbunlue, S., Khimmaktong, W., Khow, O., Chantkran, W., Noiphrom, J., Promruangreang, K., Chanhome, L., & Chaisakul, J. (2024). Snake Venom Pharmacokinetics and Acute Toxic Outcomes Following Daboia siamensis

Envenoming: Experimental and Clinical Correlations. *Toxins*, *17*(1), 10. https://doi.org/10.3390/toxins17010010

Liu, J., & Khalil, R. A. (2017). Matrix Metalloproteinase Inhibitors as Investigational and Therapeutic Tools in Unrestrained Tissue Remodeling and Pathological Disorders. In *Progress in Molecular Biology and Translational Science* (Vol. 148, pp. 355–420). Elsevier. https://doi.org/10.1016/bs.pmbts.2017.04.003

Long, C., Liu, M., Tian, H., Li, Y., Wu, F., Mwangi, J., Lu, Q., Mohamed Abd El-Aziz, T., Lai, R., & Shen, C. (2020). Potential Role of Platelet-Activating C-Type Lectin-Like Proteins in Viper Envenomation Induced Thrombotic Microangiopathy Symptom. *Toxins*, *12*(12), 749. https://doi.org/10.3390/toxins12120749

Marriott, A. E., Casewell, N. R., Lilley, E., Gutiérrez, J.-M., & Ainsworth, S. (2024). Improving in vivo assays in snake venom and antivenom research: A community discussion. *F1000Research*, *13*, 192. https://doi.org/10.12688/f1000research.148223.1

McKenna, M., Allman, M., & Hargest, R. (2024). Surgical anatomy of the skin. *Surgery (Oxford)*, *42*(11), 781–787. https://doi.org/10.1016/j.mpsur.2024.08.008

Muniz, E. G., Noronha, M. D. D. N., Saraiva, M. D. G. G., Monteiro, W. M., & Oliveira, S. S. (2021). Neutralization of hemostatic disorders induced by Lachesis muta venom using Brazilian antivenoms. *Toxicon*, *191*, 44–47. https://doi.org/10.1016/j.toxicon.2020.12.013

Nanjaraj Urs, A. N., Ramakrishnan, C., Joshi, V., Suvilesh, K. N., Veerabasappa Gowda, T., Velmurugan, D., & Vishwanath, B. S. (2015). Progressive Hemorrhage and Myotoxicity Induced by Echis carinatus Venom in Murine Model: Neutralization by Inhibitor Cocktail of N,N,N',N'-Tetrakis (2-Pyridylmethyl) Ethane-1,2-Diamine and Silymarin. *PLOS ONE*, *10*(8), e0135843. https://doi.org/10.1371/journal.pone.0135843

Nina-Cueva, O., Olazabal-Chambilla, D., Quispe-Arpasi, J., Alzamora-Sánchez, A., Gomes-Heleno, M., & Huancahuire-Vega, S. (2020). Caracterización bioquímica del veneno de la serpiente Bothrops roedingeri Mertens, 1942, y sus actividades edematógena, hemorrágica y miotóxica. *Biomédica*, *40*(4), 682–692. https://doi.org/10.7705/biomedica.5228

Olaoba, O. T., Karina Dos Santos, P., Selistre-de-Araujo, H. S., & Ferreira De Souza, D. H. (2020). Snake Venom Metalloproteinases (SVMPs): A structure-function update. *Toxicon: X*, *7*, 100052. https://doi.org/10.1016/j.toxcx.2020.100052

Olejarz, W., Łacheta, D., & Kubiak-Tomaszewska, G. (2020). Matrix Metalloproteinases as Biomarkers of Atherosclerotic Plaque Instability. *International Journal of Molecular Sciences*, *21*(11), 3946. https://doi.org/10.3390/ijms21113946

Oliveri, M., Čermáková, E., & Knotek, Z. (2016). The viper fangs: Clinical anatomy, principles of physical examination and therapy (a review). *Acta Veterinaria Brno*, *85*(3), 247–250. https://doi.org/10.2754/avb201685030247

Organization, W. H. (2018). *Guidelines for the Management of Snakebites Second Edition*. World Health Organization.

Paniagua, D., Vergara, I., Boyer, L., & Alagón, A. (2017). Role of Lymphatic System on Snake Venom Absorption. In H. Inagaki, C.-W. Vogel, A. K. Mukherjee, & T. R. Rahmy (Eds.), *Snake Venoms* (pp. 453–474). Springer Netherlands. https://doi.org/10.1007/978-94-007-6410-1_10

Parker-Cote, J., & Meggs, W. J. (2018). The role of the lymphatic system in systemic toxicity of snakebites. *Journal of Pharmacology & Clinical Toxicology*, 6(2), Article 1105. https://doi.org/10.47739/2333-7079/1105

Pijet, B., Konopka, A., Rejmak, E., Stefaniuk, M., Khomiak, D., Bulska, E., Pikul, S., & Kaczmarek, L. (2020). The matrix metalloproteinase inhibitor marimastat inhibits seizures in a model of kainic acid-induced status epilepticus. *Scientific Reports*, *10*(1), 21314. https://doi.org/10.1038/s41598-020-78341-y

Rao, S., Reghu, N., Nair, B. G., & Vanuopadath, M. (2024). The Role of Snake Venom Proteins in Inducing Inflammation Post-Envenomation: An Overview on Mechanistic Insights and Treatment Strategies. *Toxins*, *16*(12), 519. https://doi.org/10.3390/toxins16120519

Resiere, D., Mehdaoui, H., & Neviere, R. (2022). Inflammation and Oxidative Stress in Snakebite Envenomation: A Brief Descriptive Review and Clinical Implications. *Toxins*, *14*(11), 802. https://doi.org/10.3390/toxins14110802

Reza, F. (2018). Keanekaragaman Ular Pitviper Sumatera (Serpentes: Viperidae: Crotalinae) Berdasarkan Ketinggian di Sumatera Barat. *Journal of Tropical Biodiversity and Biotechnology*, *3*(2), 49. https://doi.org/10.22146/jtbb.35027

Rifaie, F., Maharani, T., & Hamidy, A. (2017). Where did Venomous Snakes Strike? A Spatial Statistical Analysis of Snakebite Cases in Bondowoso Regency, Indonesia. *HAYATI Journal of Biosciences*, *24*(3), 142–148. https://doi.org/10.1016/j.hjb.2017.09.001

Rivel, M., Solano, D., Herrera, M., Vargas, M., Villalta, M., Segura, Á., Arias, A. S., León, G., & Gutiérrez, J. M. (2016). Pathogenesis of dermonecrosis induced by venom of the spitting cobra, Naja nigricollis: An experimental study in mice. *Toxicon*, *119*, 171–179. https://doi.org/10.1016/j.toxicon.2016.06.006

Sampat, G. H., Hiremath, K., Dodakallanavar, J., Patil, V. S., Harish, D. R., Biradar, P., Mahadevamurthy, R. K., Barvaliya, M., & Roy, S. (2023). Unraveling snake venom phospholipase A2: An overview of its structure, pharmacology, and inhibitors. *Pharmacological Reports*, *75*(6), 1454–1473. https://doi.org/10.1007/s43440-023-00543-8

Sanchez, E., Flores-Ortiz, R., Alvarenga, V., & Eble, J. (2017). Direct Fibrinolytic Snake Venom Metalloproteinases Affecting Hemostasis: Structural, Biochemical Features and Therapeutic Potential. *Toxins*, *9*(12), 392. https://doi.org/10.3390/toxins9120392

Sathish, K., Shaha, K. K., Patra, A. P., & Rekha, J. S. (2021). Histopathological profile of fatal snake bite autopsy cases in a tertiary care center in South India. *Egyptian Journal of Forensic Sciences*, *11*(1), 3. https://doi.org/10.1186/s41935-021-00218-6

Senji Laxme, R. R., Khochare, S., Bhatia, S., Martin, G., & Sunagar, K. (2024). From birth to bite: The evolutionary ecology of India's medically most important snake venoms. *BMC Biology*, *22*(1), 161. https://doi.org/10.1186/s12915-024-01960-8

Shayegan, M., Altindal, T., Kiefl, E., & Forde, N. R. (2016). Intact Telopeptides Enhance Interactions between Collagens. *Biophysical Journal*, *111*(11), 2404–2416. https://doi.org/10.1016/j.bpj.2016.10.039

Silva, A., & Isbister, G. K. (2020). Current research into snake antivenoms, their mechanisms of action and applications. *Biochemical Society Transactions*, *48*(2), 537–546. https://doi.org/10.1042/BST20190739

Smith, C. F., Modahl, C. M., Ceja Galindo, D., Larson, K. Y., Maroney, S. P., Bahrabadi, L., Brandehoff, N. P., Perry, B. W., McCabe, M. C., Petras, D., Lomonte, B., Calvete, J. J., Castoe, T. A., Mackessy, S. P., Hansen, K. C., & Saviola, A. J. (2024). Assessing Target Specificity of the Small Molecule Inhibitor MARIMASTAT to Snake Venom Toxins: A Novel Application of Thermal Proteome Profiling. *Molecular & Cellular Proteomics*, *23*(6), 100779. https://doi.org/10.1016/j.mcpro.2024.100779

Standring, S., Ananad, N., Gray, H., & Gray, H. (Eds.). (2016). *Gray's anatomy: The anatomical basis of clinical practice ; [get full access and more at ExpertConsult.com]* (41. ed). Elsevier.

Strong, A. L., Bowles, A. C., MacCrimmon, C. P., Lee, S. J., Frazier, T. P., Katz, A. J., Gawronska-Kozak, B., Bunnell, B. A., & Gimble, J. M. (2015). Characterization of a Murine Pressure Ulcer Model to Assess Efficacy of Adipose-derived Stromal Cells: *Plastic and Reconstructive Surgery - Global Open*, *3*(3), e334. https://doi.org/10.1097/GOX.0000000000000260

Tan, C. H., Liew, J. L., Tan, K. Y., & Tan, N. H. (2016). Assessing SABU (Serum Anti Bisa Ular), the sole Indonesian antivenom: A proteomic analysis and neutralization efficacy study. *Scientific Reports*, *6*(1), 37299. https://doi.org/10.1038/srep37299

Tan, C. H., Tan, K. Y., Ng, T. S., Tan, N. H., & Chong, H. P. (2023). De Novo Venom Gland Transcriptome Assembly and Characterization for Calloselasma rhodostoma (Kuhl, 1824), the Malayan Pit Viper from Malaysia:

Unravelling Toxin Gene Diversity in a Medically Important Basal Crotaline. *Toxins*, *15*(5), 315. https://doi.org/10.3390/toxins15050315

Tang, E. L. H., Tan, C. H., Fung, S. Y., & Tan, N. H. (2016a). Venomics of Calloselasma rhodostoma , the Malayan pit viper: A complex toxin arsenal unraveled. *Journal of Proteomics*, *148*, 44–56. https://doi.org/10.1016/j.jprot.2016.07.006

Tang, E. L. H., Tan, C. H., Fung, S. Y., & Tan, N. H. (2016b). Venomics of Calloselasma rhodostoma , the Malayan pit viper: A complex toxin arsenal unraveled. *Journal of Proteomics*, *148*, 44–56. https://doi.org/10.1016/j.jprot.2016.07.006

Tangtrongchitr, T., Thumtecho, S., Janprasert, J., Sanprasert, K., Tongpoo, A., Tanpudsa, Y., Trakulsrichai, S., Wananukul, W., & Srisuma, S. (2021). Malayan Pit Viper Envenomation and Treatment in Thailand. *Therapeutics and Clinical Risk Management*, *Volume 17*, 1257–1266. https://doi.org/10.2147/TCRM.S337199

Tasoulis, T., & Isbister, G. (2017). A Review and Database of Snake Venom Proteomes. *Toxins*, *9*(9), 290. https://doi.org/10.3390/toxins9090290

Teixeira, C., Fernandes, C. M., Leiguez, E., & Chudzinski-Tavassi, A. M. (2019). Inflammation Induced by Platelet-Activating Viperid Snake Venoms: Perspectives on Thromboinflammation. *Frontiers in Immunology*, *10*, 2082. https://doi.org/10.3389/fimmu.2019.02082

Theocharidis, G., & Connelly, J. T. (2019). Minor collagens of the skin with not so minor functions. *Journal of Anatomy*, *235*(2), 418–429. https://doi.org/10.1111/joa.12584

Thongtonyong, N., & Chinthammitr, Y. (2020). Sensitivity and specificity of 20-minute whole blood clotting test, prothrombin time, activated partial thromboplastin time tests in diagnosis of defibrination following Malayan pit viper envenoming. *Toxicon*, *185*, 188–192. https://doi.org/10.1016/j.toxicon.2020.07.020

Tjahjani, S., Widowati, W., Khiong, K., Suhendra, A., & Tjokropranoto, R. (2014). Antioxidant Properties of Garcinia Mangostana L (Mangosteen) Rind. *Procedia Chemistry*, *13*, 198–203. https://doi.org/10.1016/j.proche.2014.12.027

Uko, S. O., Malami, I., Ibrahim, K. G., Lawal, N., Bello, M. B., Abubakar, M. B., & Imam, M. U. (2024). Revolutionizing snakebite care with novel antivenoms: Breakthroughs and barriers. *Heliyon*, *10*(3), e25531. https://doi.org/10.1016/j.heliyon.2024.e25531

Ullah, A., Masood, R., Ali, I., Ullah, K., Ali, H., Akbar, H., & Betzel, C. (2018). Thrombin-like enzymes from snake venom: Structural characterization and mechanism of action. *International Journal of Biological Macromolecules*, *114*, 788–811. https://doi.org/10.1016/j.ijbiomac.2018.03.164

Vitt, L. J., & Caldwell, J. P. (2014). Squamates—Part II. Snakes. In *Herpetology* (pp. 597–628). Elsevier. https://doi.org/10.1016/B978-0-12-386919-7.00022-8

Whittaker, M., Floyd, C. D., Brown, P., & Gearing, A. J. H. (1999). Design and Therapeutic Application of Matrix Metalloproteinase Inhibitors. *Chemical Reviews*, *99*(9), 2735–2776. https://doi.org/10.1021/cr9804543

Williams, H. F., Layfield, H. J., Vallance, T., Patel, K., Bicknell, A. B., Trim, S. A., & Vaiyapuri, S. (2019). The Urgent Need to Develop Novel Strategies for the Diagnosis and Treatment of Snakebites. *Toxins*, *11*(6), 363. https://doi.org/10.3390/toxins11060363

Wu, S., Zhou, X., Jin, Z., & Cheng, H. (2023). Collagenases and their inhibitors: A review. *Collagen and Leather*, *5*(1), 19. https://doi.org/10.1186/s42825-023-00126-6

Xie, C., Albulescu, L.-O., Bittenbinder, M. A., Somsen, G. W., Vonk, F. J., Casewell, N. R., & Kool, J. (2020). Neutralizing Effects of Small Molecule Inhibitors and Metal Chelators on Coagulopathic Viperinae Snake Venom Toxins. *Biomedicines*, *8*(9), 297. https://doi.org/10.3390/biomedicines8090297

Xie, C., Slagboom, J., Albulescu, L.-O., Bruyneel, B., Still, K. B. M., Vonk, F. J., Somsen, G. W., Casewell, N. R., & Kool, J. (2020). Antivenom Neutralization of Coagulopathic Snake Venom Toxins Assessed by Bioactivity Profiling Using Nanofractionation Analytics. *Toxins*, *12*(1), 53. https://doi.org/10.3390/toxins12010053

Yamashita, K. M., Alves, A. F., Barbaro, K. C., & Santoro, M. L. (2014). Bothrops jararaca Venom Metalloproteinases Are Essential for Coagulopathy and Increase Plasma Tissue Factor Levels during Envenomation. *PLoS Neglected Tropical Diseases*, *8*(5), e2814. https://doi.org/10.1371/journal.pntd.0002814

Young, T. L., Mostovenko, E., Denson, J. L., Begay, J. G., Lucas, S. N., Herbert, G., Zychowski, K., Hunter, R., Salazar, R., Wang, T., Fraser, K., Erdely, A., Ottens, A. K., & Campen, M. J. (2021). Pulmonary delivery of the broad-spectrum matrix metalloproteinase inhibitor marimastat diminishes multiwalled carbon nanotube-induced circulating bioactivity without reducing pulmonary inflammation. *Particle and Fibre Toxicology*, *18*(1), 34. https://doi.org/10.1186/s12989-021-00427-w

Yudha, D. S., Raihan, A. W., & Al Faqih, M. Y. (2025). Pemetaan Kasus Gigitan Ular di Kabupaten Kulon Progo, Daerah Istimewa Yogyakarta menggunakan Analisis Spasial Statistik. *Biota : Jurnal Ilmiah Ilmu-Ilmu Hayati*. https://doi.org/10.24002/biota.v10i1.5331

Załuski, D., Cieśla, Ł., & Janeczko, Z. (2015). The Structure–Activity Relationships of Plant Secondary Metabolites with Antimicrobial, Free Radical Scavenging and Inhibitory Activity toward Selected Enzymes. In

Studies in Natural Products Chemistry (Vol. 45, pp. 217–249). Elsevier. https://doi.org/10.1016/B978-0-444-63473-3.00007-1

Zhao, X., Gao, S., Lu, D., Chen, X., Yuan, G., & Wang, H. (2022). Grain yield and soil potassium fertility changes arising from different potassium-bearing materials in rice–wheat rotation. *Nutrient Cycling in Agroecosystems*, *124*(1), 117–129. https://doi.org/10.1007/s10705-022-10225-1

Zuliani, J. P. (2023). Alarmins and inflammatory aspects related to snakebite envenomation. *Toxicon*, *226*, 107088. https://doi.org/10.1016/j.toxicon.2023.107088