

從蛇傷治療邁向毒蛇基因體

Cobra Genomics for Snakebite Treatment

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In May 2018, the World Health Organization passed a resolution in Geneva requiring all Member States to supply adequate and potent anti-venom serums, aiming to reduce the mortality and disability rate caused by snakebite envenoming in half by 2030. Every year, approximately 400,000 people worldwide suffer from physical disability due to local tissue necrosis caused by snakebite envenoming as amputation is often the last treatment. This resolution addresses the long neglected problem and commits to solve it.

Our research group has adopted a novel immuno-therapeutic approach by developing small molecular inhibitors against purinergic signaling molecules of venom components. Understanding the evolutionary origin of the ubiquitously present non-toxic enzymes sheds light on elucidating their roles in venom toxicity, and therefore offers alternative treatments for snakebite envenoming. According to the Taiwan cobra genome determined in the present study, the non-toxic venom proteins are important to facilitating the systematic spread of major three-finger toxins, as well as to act synergistically to deteriorate the local tissue damage. The *in vivo* mice experiments further indicates that the inhibitors of non-toxic enzymes not only can rescue mice from neurotoxin (NTXs) -induced deaths, but also alleviate the cytotoxin (CTXs)-induced local tissue damages. Integrative genomic study of snake venom is a powerful advance, in response to WHO's resolution for treating the most neglected tropical disease of snakebites.

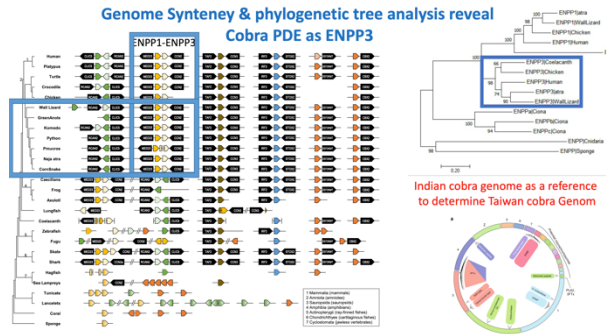
Neglected tropical diseases

06 May 2019 | Geneva — WHO has today released further details of its strategy to prevent and control snakebite envenoming, a neglected tropical disease that affects 1.8–2.7 million people each year, claiming 81 000–138 000 lives and causing 400 000 cases of permanent disability.

Snakebite: WHO targets 50% reduction in deaths and disabilities

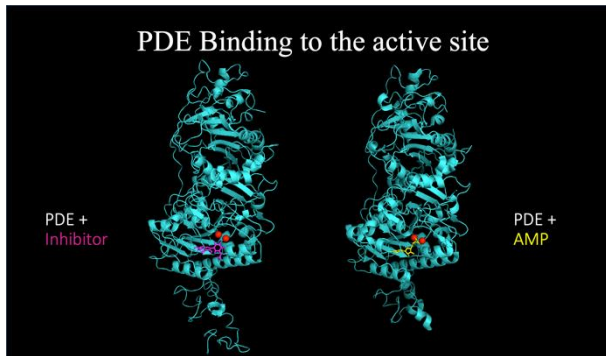


Genome Synteny & phylogenetic tree analysis reveal Cobra PDE as ENPP3

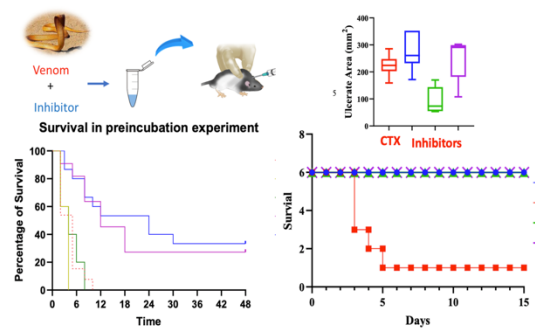


Indian cobra genome as a reference to determine Taiwan cobra Genom

PDE Binding to the active site



Novel immunotherapeutic inhibitors derived from multi-Omics approach for venom-injected mice



Topical application of snake venom PDE inhibitors

