INVITED SPEAKERS

Dr. Dong-Zong Hung, M.D., Ph.D., is a distinguished expert in the field of toxicology, currently serving as the Director of the Toxicology Center at China Medical University Hospital in Taichung, Taiwan. Additionally, he holds the position of Associate Professor at the Institute of Clinical Medicine and Research at the same university. With a robust background in clinical toxicology, Dr. Hung's research interests extend to environmental and occupational medicine, internal medicine, emergency medicine, and the study of snake bites and adverse drug reactions (ADRs). His academic journey includes a Ph.D. from the Institute of Toxicology at National Taiwan University and an M.D. from Yang-Ming Medical College. Dr. Hung has contributed significantly to the field through numerous publications, focusing on clinical manifestations and treatments of snakebites, oxidative stress from plant poisoning, and the development of diagnostic tools for venomous bites. His work also addresses public health concerns such as lead poisoning from incense burning and the long-term effects of caustic and pesticide ingestion. Dr. Hung's career is marked by his commitment to advancing toxicological research and improving clinical practices in emergency medicine.

A Rapid & Handy Diagnostic Kit for Snakebites in Asia

Snakebite envenoming is a medical emergency, rapid and correct diagnosis and management play the crucial role in patient care. There are estimated to about 67 venomous species of the families Elapidae and Viperidae snakes in Asian area. Due to the fact that multiple venomous snakes are common in an area and cause similar and confusing clinical signs, correct diagnosis and antivenom therapy are often delayed, and resulting in more harm or sequelae. So, a widely available point-of-care diagnostic test, instead of the speculatively syndromic approach, might rectify these disadvantages. Based on the avian egg yolk antibody (IgY), a cheap, easy and specific product, development platform, we have produced IgY for *Naja*, *Daboia* (RV), *Trimeresurus* and Malayan pit viper (CR), which are intended to assemble multiplex point-of-care devices for snakebites in ASEAN area. The detection limits for these venoms in patient's serum are found to be around 5-50ng/ml. The kit would be feasible to make different testing assemblies according to previous epidemiological data and/or the characteristics of venomous snakes in most of Asian areas. The country-based or area-available rapid tests also could be helpful in antivenom design and production, that make antivenoms more efficient and economical in the future.

Taking Vietnam as an example, the bite caused by the green pit viper is the most common in most areas, and the cobra and the Malayan pit viper are the other two. So, the three-in-one device should be enough to meet the demand in most regions of Vietnam, and emergency physician can select a targeted antivenom according to the result of the rapid test, which is in line with the current goal of monovalent antivenom development by Vietnam antivenom research unit. As for the clinical application in Thailand, Malaysia, Laos and Cambodia, it should be basically similar, especially in areas where CR and RV are distributed at the same habitats.

The clinical efficacy of these rapid diagnostic devices is subject to more clinical trials and regional cooperation. More detection items, such as venom of king cobra, *Bungarus* or *Echis* snake are under developing. The application of a well-designed point-of-care device in diagnosis of snakebite envenoming brings a more scientific and objective result in patient care and has the potential to support the goal of The World Health Organization (WHO) set to halve the global health burden of snakebite this neglected tropical disease by 2030.