2nd International Conference on

Antibodies and Therapeutics

July 11-12, 2016 Philadelphia, USA

High affinity anti-Internalin B VHH antibody fragments isolated from naturally and artificially immunized repertoires

Mehdi Arbabi Ghahroudi National Research Council Canada, Canada

Development of rapid detection methodologies for food-borne and environmental pathogens is essential for safe-guarding the health of populations. Distribution of tainted foods and water can have a direct impact on human health, the food industry and consequently, on economies as a whole. Antibodies and antibody fragments have been historically used in detection platforms due to their antigen specificity and robust physicochemical properties. Camelid VHH fragments, also known as Nanobodies have desirable features such as high affinity, unique target specificities and high thermal stability and solubility, making them ideal detection reagents even under non-physiological conditions. We report, for the first time, the isolation and characterization of antibody fragments from the *Camelidae* heavy chain VHH libraries which bind with specificity and high affinity to the *Listeria monocytogenes* invasin, Internalin B (InIB). These anti-InIB VHHs were not cross reactive to the structurally related Listeria invasin Internalin A (InIA) and are potential reagents to be used in the development of detection and medical technologies.

Mehdi.ArbabiGhahroudi@nrc-cnrc.gc.ca

Human monoclonal antibody fragments (scFv): A new generation of antivenoms

Manuela B Pucca University of São Paulo, Brazil

Bites and stings by venomous animals have great medical importance all over the world. In Brazil, accidents caused by snakes, spiders, bees and scorpions can cause severe clinical cases of envenoming. Nowadays, the administration of antivenoms produced in horses is recognized and used as the unique and specific treatment for envenoming. Nevertheless, horse herds' maintenance is costly and the antibodies are heterologous, which can cause anaphylaxis and Serum Sickness. Protein engineering, including Phage Display technique, allows designing novel recombinant antibody fragments which are superior to polyclonal antivenoms. In this sense, our group produced human monoclonal antibody fragments (scFvs), using phage display technology, against toxins and venoms from different venomous animals from Brazil, including the scorpion *Tityus serrulatus*, the snakes from *Bothrops, Crotalus* and *Lachesis* genus and the Africanized bee. Our results demonstrates that we produced high specific and neutralizing antibodies able to inhibit *in vitro* and *in vivo* toxic effects of *Tityus serrulatus* (Serrumab), *Bothrops* sp., *Lachesis muta, Crotalus durissus terrificus* and Africanized bee (Afribumabs) toxins and venoms. In conclusion, scFvs are promising candidates for inclusion in a mixture of specific antibodies against venoms and represent an innovative and alternative therapeutic approach to the heterologous antivenoms therapy available today.

manupucca@usp.br