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Delivery of HIV immunogens to mucosal immune system using an oral inactivated cholera vaccine

Ali Azizi
Canada

Over the past two decades, several oral vehicle delivery systems have been developed to address these challenges and deliver HIV antigens to the target cells in the mucosal immune system. However, only a limited number of orally administered vaccines against HIV-1 have been tested in human trials.We have previously developed a multivalent HIV vaccine based on env and gag hypervariable regions. Despite a broad cellular and humoral immune response in mice and macaques, IgA and IgG antibody titers were suboptimal in mucosal sites. In an attempt to increase the antibody titers in mucosal sites, this vaccine candidate was entrapped into an orally delivered lipid-based system. Our results showed that entrapment of inactivated Vibrio cholera, a component in the structure of Dukoral vaccine into this candidate oral vehicle HIV delivery system, is able to induce a more rigorous humoral immune response against HIV-1 in the systemic compartment. We further investigated the mechanism of Dukoral vaccine as a potential stimulator in induction of immune response by immunizing TLR-2-, TLR-4-, MyD88- and Trif-deficient mice. We are hopeful that these findings will lead to development of more precisely-designed oral vaccines in the future.

Biography

Ali Azizi has received his Ph.D. from the Department of Microbiology and Immunology at University of Ottawa. After graduation, he joined National Research Council of Canada as a Post-doctoral Fellow. Following his fellowship, Ali joined Variation Biotechnologies and directed several pre-clinical vaccine studies in North America or Overseas. Afterwards, he joined the Department of Pathology and Laboratory Medicine at the University of Ottawa as an Adjunct (Assistant) Professor. In 2010, Ali joined Sanofi Pasteur, the largest vaccine company dedicated to the design and development of human vaccine. He is currently involved in several human vaccine phase trials. He is also acting as a part-time Lecturer at the University of Toronto. To date, Dr. Azizi has published over 20 scientific articles in peer-reviewed journals, authored a few books, and developed several international patents. He has been acting as a reviewer for several prestigious journals and international conferences. He is also served as a grant reviewer for several governmental organizations including CIHR.

aazizi@uottawa.ca