Istvan Toth, J Nanomed Nanotechnol 2018, Volume:9
DOI: 10.4172/2157-7439-C2-069

Istvan Toth

The University of Queensland, Australia

Nanotechnology based delivery systems for vaccines

We have developed an oral vaccine delivery system to prevent infection by Group A *Streptococcus* (GAS) by encapsulating lipid core peptide (LCP) antigens into the liposomes. We synthesized the LCP construct by attaching C-16 lipoamino acid (Toll-like receptor 2 agonist) to J-14 (B-cell epitope derived from GAS M-protein) and P25 (CD4+ T helper cell epitope). Blank liposomes were formulated and optimized for charge and lipid content using a thin film formation method. Optimized liposomes were coated with positively charged trimethyl chitosan (TMC) then negatively charged sodium alginate in a layer-by-layer approach. These formulations were subsequently characterized by dynamic light scattering (DLS) and transmission electron microscopy (TEM). Optimized formulations were further investigated for their efficiency of uptake by intestinal immune cells and ability to induce mucosal IgA and systemic IgG responses. Fertility is controlled by decreasing the level of circulating Gonadotropin-Releasing Hormone (GnRH) or stimulating the down-regulation of GnRH receptors on gonadotropin cells. Using two independent approaches we regulated the action of GnRH on gonadotropic cells, thereby controlling fertility in mice and ram models. The first approach was to develop super-agonist by modifying GnRH with lipids and sugars, the second approach was immunocastration.

Biography

Istvan Toth is the Chair in Biological Chemistry and Professor of Pharmacy in the University of Queensland (UQ), Brisbane, Australia; Affiliated Professorial Research Fellow and Group Leader, Institute of Molecular Biosciences, UQ. He has graduated with a degree in Chemical Engineering from the Technical University, Budapest, Hungary in 1969 and was awarded with PhD in 1972 for research in Alkaloid Chemistry. In 1994, he was awarded a DSc for his work on Drug Delivery. He is an elected RACI Fellow, Fellow of the Queensland Academy of Arts and Sciences and Fellow (External) of the Hungarian Academy of Sciences. He has over 400 peer-reviewed publications (>500 citations/year since 2012), 44 patents, and a strong record in research commercialization.

i.toth@uq.edu.au

Notes: