Jay Babu Ramapuram

Auburn University, USA

Ceramides based liposomes for melanoma treatment

Ceramides are composed of a sphingoid base attached to a fatty acid via an amide bond. These lipids serve both a structural role in membranes and an intracellular signaling role within a cell. Ceramide is a natural molecule that targets discrete kinases and signaling pathways linked to proliferation and/or survival. Due to its potent regulation of cell growth, differentiation, and death, ceramide has been identified as a putative therapeutic agent in cancer and cardiovascular disease. The use of ceramide to inhibit Akt signaling is a novel approach under preclinical evaluation. Ceramide targets the PI3K/Akt pathway through dephosphorylation of Akt, leading to increased cytotoxicity and cell apoptosis when in combination with another chemotherapeutics, can enhance cell death. An obstacle that has limited clinical use of ceramide is its hydrophobicity, which can be overcome by packaging it into a nanoliposomal formulation for systemic delivery. Hydrophilic drugs can be entrapped in the aqueous compartment, while the lipid bilayer can be utilized to incorporate hydrophobic drugs. Associating a drug with liposome markedly changes its pharmacokinetic properties and lowers systemic toxicity; furthermore, the drug is prevented form early degradation and/or inactivation in circulation. This presentation discusses the role of ceramides in the formulation of liposomes for the delivery of model anti-cancer drugs such as doxorubicin and daunorubicin. The synergistic function of ceramide based liposomal formulations in melanoma, breast and prostate cancers will be discussed

Speaker Biography

Jay Babu Ramapuram has completed his PhD from Indian Institute of Technology, Varanasi, India. He is the Professor in the Dept. of Drug Discovery and Development at Auburn University, USA. He has over 80 publications that have been cited over 1300 times, and his publication H-index is 21 and has been serving as an Editorial Board Member of reputed Journals in his research area.

e: rjbabu68@gmail.com

Notes: