Design and manufacture of applicable delivery system for toxic drugs

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The most recent report by the Tufts Center for the average cost to develop and gain marketing approval for a new drug pegged at $2.558 billion. However, to develop a proper delivery system for the marketed biologic entities must cost very little for improving their therapeutic effect and decrease the side. We have successfully achieved the preparation of intact solid lipid nanovesicles that carry active pharmaceutical ingredients (API) and upon rehydration form liposomes with controlled drug release capability. To demonstrate these solid lipid nanovesicles, which were prepared by lyophilizing the mixture of liposomes combined without or with ligands such as DSS or CA9, entrapped water-soluble API such as albuterol, siRNA or insulin, mixed with cryoprotectant lactose and a plasticizer glycerol and water. Our data shows the release of encapsulated albuterol with linear types from rehydrated liposomes in Tris-buffered saline and the TEM micrographs were token of solid lipid nanovesicles. Liposome structure, entrapped API and controlled release capability were retained after lyophilization and rehydration, and the in vivo delivery effective were confirmed.

Since solid lipid nanovesicles are more adaptable than liposomes or other nanoparticles to a wide variety of APIs and dosage forms, our novel invention allows a much wider usage of liposome technology in numerous pharmaceutical, chemical and biological situations. We are authorized the patent from China for the application of the solid lipid nanovesicles, it can be used to develop many well-known biologic entities with strongest toxicity, e.g. triptolide, podophyllotoxin, etc., to some new cancer therapeutic entities.

Biography
Zhijun Yang has completed his PhD from Chiba University, Japan and Post-doctoral studies from University of British Colombia, Canada. He is the Vice Director of Changshu Research Institute, an Associate Professor of School of Chinese Medicine, Hong Kong Baptist University. He has published more than 40 papers in reputed journals and has been serving as an Editorial Board Member of Scientific Reports - Nature.

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