OMICS Group Conferences
Accelerating Scientific Discovery

4th World Congress on
Bioavailability and Bioequivalence:
Pharmaceutical R&D Summit
May 20-22, 2013 DoubleTree by Hilton, Beijing, China

Application of nanotechnology for targeting brain delivery

Jiukuan Hao
University of Cincinnati, USA

Many brain diseases do not respond to therapeutics, and have no effective long-term therapy. Although some drugs have shown promising effect on many brain diseases in experimental models, but cannot be used clinically due to a lack of brain uptake. Development of novel strategies for noninvasive drug delivery across the blood-brain barrier (BBB) is one of the few most challenging topics in pharmaceutical research. A number of active transport systems exist at the mammalian blood brain barrier, for both small molecules and large molecules. The physiological functions of these transport systems include supplying nutrients and growth factors to the brain, but they also can be used for brain drug delivery. Drugs, which are unable to cross the BBB itself can be attached to a ligand of a receptor-mediated transport system and thereby gain access to brain ("Trojan horse strategy"). These processes are the basis of novel strategy to deliver drugs to the brain. Currently, advances in the field of nanotechnology have provided the feasible technology for brain drug delivery. Application of receptor-mediated transport and nanotechnology together will be able to generate new platforms that are capable of transporting drugs across the blood-brain barrier, and even targeting specific cell types or functional states within the brain, and enabling visualization in vivo.

Biography

Jiukuan Hao has completed his M.D. from China Medical University and Ph.D. from Texas Tech University, and completed his postdoctoral studies at Universidad Central Del Caribe, Puerto Rico. He is the Assistant Professor of Pharmacetical Science at The James L. Winkle College of Pharmacy, University of Cincinnati, OH, USA. He has published more than 15 papers and serving as a reviewer for scientific journals and fundations.

haojn@ucmail.uc.edu