

開發具穿越血腦障壁能力之胜肽

Innovations in Targeting Peptides for Blood-Brain Barrier Penetration

The blood-brain barrier (BBB) plays a crucial role in protecting the central nervous system (CNS) from injury; however, this vital defense mechanism also poses significant challenges for diagnosing and treating brain diseases. In order to address the challenges associated with the delivery of compounds into the central nervous system (CNS), the utilization of targeting moieties has proven to be an effective strategy. In this investigation, a family of peptides is synthesized via solid-phase peptide synthesis with functions of BBB permeability and delivery capability to target sites in the CNS. For screening peptides with BBB-crossing ability, an in vitro BBB model is constructed from the endothelial cell tight junctions. Its permeability is monitored by the Trans-Epithelial/Endothelial Electrical Resistance value as well as the permeability marker, lucifer yellow. Among the screening of permeability peptides, three fluorescein isothiocyanate (FITC)-labeled promising peptides are dedicated to perform the significant penetration ability in the in vitro BBB system through high-performance liquid chromatography (HPLC), flow cytometry, and fluorescence spectrometer, indicating they are potential candidates for further drug delivery studies.