

Development of non-invasive drug and biomedicine delivery technologies based on the physiological nose-to-brain routes

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The blood-brain barrier (BBB) poses a major challenge to the drug development efforts targeting brain/central nervous system (CNS) diseases, since it limits the distribution of systemically administered therapeutics to the brain/CNS. Therefore, the development of effective strategies for enhancing drug delivery to the brain has been a topic of great interest in both clinical and pharmaceutical fields. Intranasal administration has been noted as a method of non-invasive delivery of a drug to the brain/CNS by bypassing the BBB via the nose-to-brain route. This "nose-to-brain" delivery system has the potential to be highly versatile, and a combination of this system with the new drug and biomedicine, which is thought to show promise in the treatment of CNS diseases. In addition, nano-sized drug carriers can improve nose-to-brain delivery.

In this seminar, we introduce overview of nose-to-brain delivery and our developed cell penetrating Tat peptide-modified block copolymer micelles (PEG-PCL-Peptide) for improvement of mucosal permeability and nose-to-brain transport efficiency.