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International Journal of Pharmaceutics
Volume 565, 30 June 2019, Pages 258-268

Targeted drug delivery to the brain via intranasal nanoemulsion: Available proof of concept and existing challenges (Review)

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Abstract

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Intranasal delivery has shown to circumvent blood-brain-barrier (BBB)and deliver the drugs into the CNS at a higher rate and extent than other conventional routes. The mechanism of drug transport from nose-to-brain is not fully understood yet, but several neuronal pathways are considered to be involved. Intranasal nanoemulsion for brain targeting is investigated extensively. Higher brain distribution of drug after administering intranasal nanoemulsion was established by many researchers. Issues with nasomucosal clearance are solved by formulating modified nanoemulsion; for instance, mucoadhesive nanoemulsion or in situ nanoemulgel. However, no intranasal nanoemulsion for brain targeted drug delivery has been able to cross the way from 'benches to bed-side' of patients. Possibilities of toxicity by repeated administration, irregular nasal absorption during the diseased condition, use of a high amount of surfactants are few of the persisting challenges that need to overcome in coming days. Understanding the ways how current developments has solved some challenges is necessary. At the same time, the future direction of the research on intranasal nanoemulsion should be figured out based on existing challenges. This review is focused on the current developments of intranasal nanoemulsion with special emphasis on the existing challenges that would help to set future research direction. © 2019

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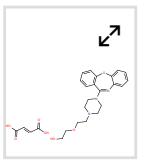
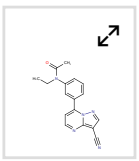
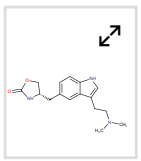
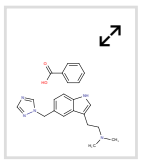
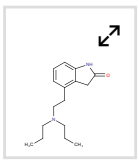
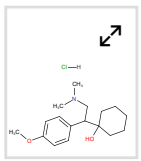

Author keywords

In situ gel | Intranasal | Mucoadhesive nanoemulsion | Nanoemulgel | Nanoemulsion | Nose to brain

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MeSH: Administration, Intranasal, Animals, Brain, Drug Delivery Systems, Emulsions, Humans, Nanoparticles, Nasal Mucosa

Chemicals and CAS Registry Numbers:

Emulsions

Funding details

Funding sponsor	Funding number	Acronym
Ministry of Higher Education, Malaysia	FRGS 17-006-0572	MOHE

Funding text
The authors are thankful to the Ministry of Education, Malaysia (FRGS 17-006-0572) for indirect financial assistance for successful completion of this article. The authors are also thankful to International Islamic University Malaysia and School of Pharmacy, Taylor University, Malaysia for providing some web-based resources for this article.

ISSN: 03785173
CODEN: IJPHD
Source Type: Journal
Original language: English
DOI: 10.1016/j.ijpharm.2019.05.032
PubMed ID: 31095983
Document Type: Review
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