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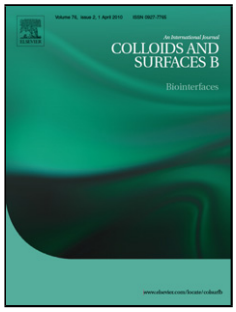

Title: Thermosensitive in situ nanocomposite as an intranasal delivery system of rivastigmine hydrogen tartrate: development, characterization, ex vivo permeation and cellular studies

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Thermosensitive in situ nanocomposite as an intranasal delivery system of rivastigmine hydrogen tartrate: development, characterization, ex vivo permeation and cellular studies

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Running title: Thermosensitive in situ nanocomposite as an intranasal delivery system

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Highlights

- Embedded nanoparticles in gels improved stability and loading of rivastigmine.
- Nanoparticles-loaded gels resulted in a sustained drug release profile.
- Nanoparticles-loaded gels showed an increased drug permeability.
- Nanoparticles led to a time- and dose-dependent increase in cellular uptake.

Abstract

Intranasal administration of pharmaceutical compounds is gaining considerable attention as an alternative route for localized/systemic drug delivery. However, insufficient therapeutic efficacy of drugs via this route seems to be a major challenge for development of *de novo* intranasal formulations. This shortcoming can be overcome by simultaneous utilization of a nanoparticulate delivery system with a polymeric gel network. Therefore, the main aim of the present study was to develop erodible in-situ gel forming systems of poloxamer 407® (P407) as a promising platform, capable of prolonging rivastigmine hydrogen tartrate (RHT) release from the embedded poly (lactic-co-glycolic acid) (PLGA)