

2nd World Congress and Expo on Nanotechnology and Material Science April 04-06, 2016 at Dubai, UAE

Nanoparticulate Polyelectrolyte Complexes for Transdermal Drug Delivery

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Context: Nanoparticulate systems are new tools that promise a revolution in the field of drug delivery. Among their numerous benefits, polyelectrolyte complexes (PECs) have shown to provide a barrier to drug release.

Objective: In this study, PECs, in the form of self-assembled polymeric nanogels, have been studied as potential drug carriers of the freely soluble drug tramadol HCL trying to achieve a prolonged percutaneous permeation.

Methodology: The hydrogels were subjected to swelling, rheology, release and permeation studies and were characterized by FTIR spectroscopy and scanning electron microscopy. Results: P2 hydrogel composed of chitosan-carrageenan (1-1) PEC attained the most compromised rheological shear-thinning thixotropic behavior, good bioadhesive properties, the most retarded release and permeation with an f_2 value <50 compared to chitosan hydrogel, altogether with non-irritancy to the skin. SEM photographs showed that P2 has spherical nanosized particles structure.

Conclusion: This approach can provide us promising results for an around-the-clock analgesia with better safety and tolerability profile.

Biography:

Rabab Kamel is an Assistant Prof. of Pharmaceutical Technology (from 2013), She received her Bsc (in 2000), her master (in 2005) and her PhD (in 2008)in Pharmaceutical Sciences from Cairo University. **Rabab Kamel** has a broad technical as well as academic experience (more than 15 years) in the pharmaceutical/healthcare field. **Rabab Kamel** has participated in different multidisciplinary research projects. **Rabab Kamel has** published many research papers focused on recent pharmaceutical technologies and modern pharmacotherapy involving nanotechnology.