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Dexamethasone-21phosphate loading and release from pH-sensitive copolymers of 2-hydroxyethyl methacrylate and 2-(diisopropylamino)ethyl methacrylate.

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Smart polymers like pH-sensitive systems can improve the pharmacological treatment of diseases. Topical application is perhaps the most typical treatment practice in ophthalmic therapies; however it is inefficient and sometimes produces side effects. A possibility to improve drug residence time and bioavailability is the use of a pH-sensitive hydrogel as a vehicle to control the drug delivery.In this work the behavior of copolymers containing 2-hydroxyethyl methacrylate (HEMA) with different proportions of 2-(diisopropylamino) ethyl methacrylate (DPA) and different amounts of cross-linker agent, ethylene glycol dimethacrylate (EGDMA) are evaluated as drug delivery systems for ophthalmic therapies. Drug load and release studies at different pH values were evaluated using dexamethasone-21 phosphate (DXP) as a model drug. The interaction between the polymer matrix and the drug was studied by IR spectroscopy (FTIR), and drug distribution and film morphology at different pH valueswere studiedby scanning electron microscopy (SEM). The results show thatthe loading of DXP increaseswith DPA content and crosslinking degree. Also the incorporation of DXP into the matrix depends on the medium pH and increase at basic pH. SEM images show important morphological changes when varying the medium pH and it can be seen the presence of the DXP loading in the polymer matrix. FTIR spectra of copolymers show an interaction between the drug and the polymer matrix through the shifting of the carbonyl stretching band. The release of DXP from copolymers of HEMA and DPA is sensitive to small pH variations in the range of 7.00 and 7.80. Kinetics releases shows case-II or anomalous diffusion behavior depending on the HEMA/DPA ratio.At medium ocular pH (7.40) the exponents values (*n*) obtained for the hydrogels containing 10 wt. % of DPA are close to 1.0, suggesting a case-II transport and for hydrogels containing 30 wt. % of DPAthe *n* values are between 0.5 and 1 indicating an anomalous behavior.

Development and *in vitro* dissolution studies of solid dispersions containing thalidomide.

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Key-works: thalidomide, solid dispersion, dissolution, gelucire, TPGS.

Thalidomide (THD) is a drug with promising therapeutic action on injuries associated with erythema nodosum leprosum, aphthous ulcers, in HIV+/AIDS and chronic degenerative diseases, among others.