

عنوان مقاله:

Production of of Ibuprofen Pellets Containing High Amount of Rate Retarding Eudragit RL Using PEG۴۰۰ and Investigation of Their Physicomechanical Properties

محل انتشار:

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خلاصه مقاله:

Objective(s) The aim of this study was to investigate the possibility of production of ibuprofen pellets with high amount of rate retarding polymer by aid of PEG۴۰۰ as plasticizer. **Materials and Methods** Polyethylene glycol (PEG۴۰۰) in concentrations of ۱, ۳ or ۵% w/w with respect to Eudragit RL was used in production of pellets containing ۶۰% ibuprofen and ۴۰% excipient (۲% polyvinylpyrrolidone (PVP), ۷.۶ or ۰% microcrystalline cellulose (MCC) and ۳۰.۴ or ۳۸% Eudragit RL). Physicomechanical and release properties of pellets were evaluated. **Results** In presence of PEG۴۰۰, formulations containing ۳۰.۴% Eudragit RL and ۷.۶% MCC could easily form pellets. In formulations without any MCC pellets were obtained only in presence of ۳ or ۵% PEG۴۰۰. Pellets containing MCC with ۰ or ۱% PEG۴۰۰ showed brittle properties but those with ۳% or ۵% PEG۴۰۰ showed plastic nature under pressure. Elastic modulus dramatically decreased with increasing PEG۴۰۰ indicating softening of pellets. This was due to shift of Eudragit structure from glassy to rubbery state which was supported by DSC studies. Mean dissolution time (MDT) increased with addition of ۱ or ۳% PEG۴۰۰ but this was not the case for pellets with ۵% PEG۴۰۰. **Conclusion** Overall PEG۴۰۰ is a potential plasticizer in production of pellets based on Eudragit RL and ibuprofen. The ease in process of extrusion-spheronization, increasing the mean dissolution time and change in mechanical properties of pellets from brittle to plastic behavior were advantages of using PEG۴۰۰. Changes in mechanical properties of pellets are important when pellets are intended to be compressed as tablets.

کلمات کلیدی:

Eudragit RL, Extrusion-spheronization, Ibuprofen, Microcrystalline cellulose, Pellets, PEG۴۰۰

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