

บทคัดย่อภาษาอังกฤษ

Research Title	Novel efficient superdisintegrants prepared from poly(methacrylic acid co-ethylene glycol dimethacrylate)
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Abstract

In this research, poly(methacrylic acid (MAA)-co-ethylene glycol dimethacrylate (EGD)) or MAGD in acid (H), sodium salt (Na) and potassium salt (K) forms at 0.25-16 % of crosslinker (EGD) were synthesized and compared the characteristics using Fourier transform infrared spectroscopy (FTIR), water uptake (hydration), swelling capacity, disintegrating efficiency and cytotoxicity to Caco-2 cell. The FTIR results demonstrated that the MAGD polymers in H, Na and K forms were successfully prepared. In contact with water, the polymers in Na and K forms hydrated and swelled more than those in H form. The hydration and swelling abilities of MAGD polymers in all forms decreased with increasing the amounts of crosslinker. The incorporation of prepared polymers accelerated the disintegration of microcrystalline cellulose placebo tablets, which the disintegrating efficiency depended on the salt form and amount of crosslinker. Further investigations using a selected polymer i.e. MAGD in Na form at 16 % of EGD revealed that the disintegrating efficiency was also affected by the concentration of MAGD polymer, magnesium stearate and type of compression fillers. The cytotoxicity test showed that the MAGD polymer in Na form at 16 % of crosslinker was non-toxic to the Caco-2 cell. As incorporated at 2.5 and 10 % in 20 mg propranolol hydrochloride tablet and 375 mg paracetamol tablet, the MAGD polymer enabled only the 20 mg propranolol hydrochloride tablet to have acceptable physical properties and release functionality according to pharmacopoeia. Therefore, it could be concluded that the MAGD polymer had potential to be a non-toxic, effective disintegrant for drug tablets

KEY WORDS: Disintegrant, polymer, methacrylic acid, ethylene glycol dimethacrylate, propranolol hydrochloride, paracetamol.