

Sago starch based hydrogel prepared using electron beam irradiation technique for controlled release application

ABSTRACT

Carboxymethyl Sago starch (CMSS) is one of the natural polymers with high value as a polymeric device for medical application due to its potential as biocompatible materials. The monomer blending with modified natural polymers by irradiation technique has received wide attention due to the simple method of preparation, more promising material and free chemical residue in the product. CMSS/methacrylic acid (MAA) hydrogels were synthesized by Electron Beam irradiation at 2meV, 10mA. The objective of this study was to evaluate the ability of hydrogels from modified carboxymethyl sago starch CMSS for oral drug delivery. The hydrogels were characterized by FT-IR, TGA and DTG. The effects of the preparation conditions such as the, monomer composition and irradiation dose on the gel fraction of the synthesized hydrogel were investigated. The swelling properties of the hydrogel were carried out in acidic media, neutral and alkaline media at different temperatures (27°C – 60 °C). The pH sensitive properties of CMSS/MAA hydrogel showed that it can be used as drug delivery devices due to suitability of pH response to the environment in gastrointestinal tract.

Keyword: Carboxymethyl sago starch; Hydrogels; Controlled release