

Sintesis dan karakterisasi Hidrogel Kitosan-Graft-Poli(N-Vinil Pirrolidon) = Synthesis and characterization of Chitosan-Graft-Poly(N-Vinyl Pyrrolidone) Hydrogel

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Abstrak

Hidrogel merupakan polimer superabsorben yang dapat menyerap dan menahan sejumlah besar medium cair. Hidrogel kitosan-graft-poli(N-vinil pirrolidon) atau kitosan-graft-PNVP disintesis melalui proses polimerisasi radikal bebas. Polimer ini diikatsilangkan pada rantai cabang, rantai PNVP, dengan agen pengikat silang yang berbeda, yaitu N,N'-Metilen Bisakrilamida (MBA) dan Etilen Glikol Dimetakrilat (EGDMA). Kemampuan swelling hidrogel kitosan-graft-PNVP terikat silang dilakukan dengan merendamnya dalam media cair. Pengaruh jenis dan konsentrasi agen pengikat silang serta waktu reaksi terhadap daya absorpsi air telah diamati. Hidrogel yang terikat silang dengan EGDMA memperlihatkan rasio swelling lebih besar dibandingkan dengan hidrogel yang terikat silang dengan MBA. Kemampuan menyerap hidrogel yang terikat silang dengan EGDMA dapat mencapai 50% dari berat sebelum menyerap air. Produk ini dikarakterisasi menggunakan Fourier Transform Infrared Spectroscopy (FTIR), Differential Scanning Calorimetry (DSC) dan Scanning Electron Microscope (SEM).

.....Hydrogels are superabsorbent polymer that it can be able to absorb and retain large amounts of aqueous fluids. Hydrogel chitosan-graft-poly(N-vinyl pyrrolidone) or chitosan-graft-PNVP has been synthesized by free radical polymerization. It is synthesized by crosslinking in the branch chains, PNVP chains, with different crosslinking agents, i.e. N,N'-Methylene Bisacrylamide (MBA) dan Ethylene Glycol Dimethacrylate (EGDMA). The swelling behavior of the crosslinked chitosan-graft-PNVP was measured by immerse it in the water. The effect of different and concentration of crosslinked agents and also reaction time on water absorbency have been investigated. Crosslinked hydrogel by using crosslinker EGDMA had showed that swelling ratio is higher than crosslinked hydrogel by using crosslinker MBA. The swelling behavior of crosslinked hydrogel by using crosslinker EGDMA can absorb water until 50% from its weight before absorbed. Resulted hydrogels were characterized by Fourier Transform Infrared Spectroscopy (FTIR), Differential Scanning Calorimetry (DSC) and Scanning Electron Microscope (SEM).