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Sintesis polimer superabsorben dari hidrogel kitosan terikat silang

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Abstrak

Hidrogel superabsorben dapat menyerap dan menahan sejumlah besar larutan. Polimer superabsorben berdasarkan hidrogel kitosan disintesis dengan mengikatsilang kitosan dengan agen pengikat silang yang berbeda, yaitu Formaldehid, Asetaldehid, dan Glutaraldehid. Kemampuan swelling hidrogel kitosan terikat silang dilakukan dengan merendam gel dalam media cair dan pengaruh agen pengikat silang terhadap daya absorbsi air telah diamati. Hidrogel kitosan terikat silang dengan asetaldehid memperlihatkan rasio swelling paling tinggi hingga 350%. Pengaruh luar yang mempengaruhi seperti pH dan suhu media swelling diamati. Hidrogel memperlihatkan perilaku yang khas terhadap pH dan suhu media seperti pada media pH rendah (pH 4) dan suhu tinggi (55oC) swelling maksimal sedangkan pada pH tinggi (pH 10) dan suhu rendah (35oC) memperlihatkan swelling minimal. Film hidrogel kitosan terikat silang dikarakterisasi menggunakan Fourier Transform Infrared Spectroscopy (FTIR).

.....Superabsorbent hydrogels are able to absorb and retain large amounts of aqueous fluids. Superabsorbent polymer based crosslinked chitosan hydrogels were synthesized by crosslinking chitosan with different crosslinking agents, i.e. formaldehyde, acetaldehyde and glutaraldehyde. The Swelling behavior of the crosslinked chitosan hydrogels was measured by immerse the gels and the effect of crosslinking agent on water absorbency has been investigated. The crosslinked chitosan hydrogel by acetaldehyde exhibited a higher swelling ratio up to 350%. The influence of external stimuli such as pH and temperature of the swelling media has been observed. Hydrogels showed a typical pH and temperature responsive behaviour such as low pH (pH 4) and high temperature (55oC) has maximum swelling while high pH (pH 10) and low temperature (35oC) show minimum swelling. The film of crosslinked chitosan hydrogels were characterized by Fourier Transform Infrared Spectroscopy (FTIR).