

Sintesis dan karakterisasi Hidrogel Kitosan-Poli(N-vinil pirolidon) terikat silang formaldehida dengan metode semi-interpenetrating polymer network = Synthesis and characterization of Hydrogel Chitosan-Poly(N- Vinyl Pyrrolidone) crosslinked by formaldehyde by semi- interpenetrating polymer network method

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Abstrak

Metode semi-Interpenetrating Polymer Network (semi-IPN) dapat digunakan untuk mensintesis hidrogel. Pada metode ini, jaringan kitosan terikat silang formaldehida akan berinteraksi dengan poli(N-vinil pirolidon) linear. Secara umum, rasio swelling dan derajat ikat silang hidrogel semi-IPN dipengaruhi oleh komposisi kitosan-PVP, konsentrasi formaldehida, dan waktu reaksi. Rasio swelling dan derajat ikat silang dari hidrogel kitosan-poli(N-vinil pirolidon) semi-IPN didapatkan sebesar 553,70% dan 58,82% pada rasio kitosan-poli(N-vinil pirolidon) 70:30 (%b/b), konsentrasi formaldehida 2% (%b/b), dan waktu reaksi 3 jam. Hidrogel kitosan-poli(N-vinil pirolidon) semi-IPN menunjukkan penurunan rasio swelling dan peningkatan derajat ikat silang dibandingkan hidrogel kitosan nonkovalen.

*Semi-Interpenetrating Polymer Network (semi-IPN) method was used to synthesize hydrogel. In this method, chitosan was crosslinked with formaldehyde and blended with Poly(N-vinyl pyrrolidone) to form crosslinked chitosan network that interacts with linear polymer of Poly(N-vinyl pyrrolidone). Generally, swelling ratio and degree of crosslinking of semi-IPN hydrogel were influenced by Poly(N-vinyl pyrrolidone) amount, concentration of formaldehyde, and reaction time. Swelling ratio and degree of crosslinking of semi-IPN hydrogel was obtained at 553,70% and 58,82% in the ratio of chitosan- Poly(N-vinyl pyrrolidone) 70:30 (% w/w), formaldehyde concentration of 2%, and 3 hours of reaction time. Semi-IPN hydrogel of chitosan-Poly(N-vinyl pyrrolidone) has lower swelling ratio and higher degree of crosslinking compared to hydrogel of chitosan.*