ABSTRAK

Film Tipis kitosan yang dibuat pada umumnya hanya menggunakan pelarut asam asetat. Untuk mempelajari karakter film tipis kitosan, dalam penelitian ini dilakukan pelarutan kitosan dalam berbagai asam karboksilat seperti asam format, asam glikolat, asam laktat, asam malat dan asam sitrat sebagai pilihan lain pengganti pelarut asam asetat. Berdasarkan data, didapatkan bahwa semua asam karboksilat secara efektif dapat melarutkan kitosan untuk menggantikan asam asetat. Hasil FTIR menunjukan kehadiran gugus C-O, C-N, N-H primer, N-H sekunder, O-H dan C=O pada film tipis. Konsentrasi kitosan yang lebih besar, membuat film tipis menjadi lebih tebal dan menurunkan nilai serapan air, porositas, hidrofilik, sifat dan morfologi film tipis. Berdasar uji sifat fisika, secara umum nilai serapan air, derajat pengembangan dan porositas, berturut-turut dari yang paling kecil ke besar adalah asam format<asam asetat<asam laktat<asam glikolat<asam malat<asam sitrat. Pada pH 3, semua film tipis kembali terlarut, pada pH 5 film tipis kitosan mengalami sedikit penurunan berat (kerusakan), mulai pH 7-11 film tipis stabil/tidak mengalami kerusakan. Semua film tipis terurai pada minggu ke 9, dengan laju penguraian berbeda. Urutan kuat mekanik film tipis adalah sebagai berikut asam asetat<asam format<asam malat<asam laktat<asam glikolat<asam sitrat. Elongasi atau kemampuan meregang film tipis berturut-turut meningkat asam asetat<asam format<asam laktat<asam malat<asam glikolat<asam sitrat. Berdasar uji SEM, urutan porous film tipis adalah asam asetat< asam format<asam glikolat<asam laktat<asam malat<asam sitrat.

Kata kunci: Kitosan, pelarut, film tipis, asam karboksilat

ABSTRACT

Chitosan thin films are generally made only using acetic acid as a solvent. To study the characteristics of chitosan thin films, in this research, chitosan was dissolved in various carboxylic acids such as formic acid, glycolic acid, lactic acid, malic acid and citric acid as another alternative to acetic acid as a solvent. Based on the data, it was found that all carboxylic acids could effectively dissolve chitosan to replace acetic acid. FTIR results show the presence of C-O, C-N, primary N-H, secondary N-H, O-H and C=O groups in the thin film. A greater concentration of chitosan makes the thin film thicker and reduces the water absorption, porosity, hydrophilic, properties and morphology of the thin film. Based on the physical properties test, in general the water absorption values, degree of expansion and porosity, respectively from smallest to largest, are formic acid<acetic acid<lactic acid<glycolic acid<malic acid<citric acid. At pH 3, all the thin films dissolved again, at pH 5 the chitosan thin films experienced a slight decrease in weight (damage), starting at pH 7-11 the thin films were stable/not damaged. All thin films decomposed at week 9, with different decomposition rates. The order of mechanical strength of thin films is as follows: acetic acid<formic acid<malic acid<lactic acid<glycolic acid<citric acid. The elongation or stretching ability of thin films increases successively acetic acid<formic acid<lactic acid<malic acid<glycolic acid<citric acid. Based on the SEM test, the order of porous thin films is acetic acid< formic acid<glycolic acid<lactic acid<malic acid<citric acid.

Keywords: Chitosan, solvent, thin film, carboxylic acid