Intisari

ANALISIS KUALITAS GELATIN KULIT KAKAP MERAH DAN PULLULAN UNTUK PEMBUATAN MEMBRAN BIOMEDIS DENGAN METODE *ELECTROSPINNING*

Kulit ikan kakap merah adalah hasil samping dari industri pengolahan filet yang belum dimanfaatkan secara optimal. Kulit ikan kakap merah mengandung protein tinggi dan berpotensi diolah sebagai bahan baku gelatin untuk produk pangan dan kesehatan. Tujuan penelitian adalah pengolahan gelatin dari kulit ikan kakap merah sebagai bahan baku sediaan membran biomedis dengan metode *electrospinning*. Peneltian ini menggunakan rancangan acak lengkap faktor tunggal, dengan perlakuan ratio gelatin ikan dan pullulan yaitu: 25:75 (p1), 50:50 (p2) dan 75:25 (p3) dengan apa sebagai kontrol (p0). Profil gelatin kulit ikan kakap merah yaitu: rendemen (12,27±3,37%), pH (5,05±0,06); kadar air (3,45±0,20%); kadar abu (1,46±0,44%), kadar protein (53,40±3,15%), kekuatan gel (99,37 bloom), dan viskositas (9,24 cP). Berdasarkan hasil pengamatan dengan mikroskop cahaya, benang nanofiber teramati pada perlakuan p0 dan p1. Pada perlakuan p2 dan p3 benang nanofiber tidak teramati, sehingga tidak dilakukan uji lanjut pada kedua perlakuan tersebut. Dari pengamatan dengan SEM, terlihat ukuran dan bentuk benang pada perlakuan p1 dan p0 relatif sama (berukuran <1 µm). Hasil pengamatan dengan FTIR menunjukkan bahwa perlakuan p0 dan p1 memiliki 4 gugus fungsi yang sama (alifatik fosfat, alifatik amina sekunder, alkil monosubtitusi, dan alifatik hidrokarbon). Perlakuan p0 memiliki 1 gugus fungsi tambahan yakni fenol yang menandakan gelatin mengalami ionisasi dan melepaskan gugus fenol. Pada uji kelarutan, perlakuan p1 lebih lama larut yakni 9,33±3,21 detik, p0 memiliki waktu larut 4,67±0,58 detik. Dari 3 sampel uji, p1 merupakan perlakuan terbaik dibandingkan dengan p2 dan p3 (dari uji mikroskop cahaya, SEM, FTIR dan kelarutan).

Kata kunci: bovine, gelatin, kulit ikan, membran, pullulan

Abstract

ANALYSIS OF RED SNAPPER SKIN GELATIN AND PULLULAN QUALITY FOR PREPARATION OF BIOMEDICAL MEMBRANE USING ELECTROSPINNING METHOD

Red snapper skin is a by-product of the fillet processing industry that has not been optimally utilized. Red snapper skin contains high protein and has the potential to be processed into gelatin for food and health products. This research uses the electrospinning method to process gelatin from red snapper skin as a raw material for biomedical membrane preparation. This research employed a completely randomized design with a single factor, testing different ratios of fish gelatin to pullulan: 25:75 (p1), 50:50 (p2), and 75:25 (p3), with a control (p0). The profile of red snapper skin gelatin includes yield (12.27±3.37%), pH (5.05±0.06), moisture content (3.45±0.20%), ash content (1.46±0.44%), protein content (53.40±3.15%), gel strength (99,37 bloom), and viscosity (9,24 cP). Based on light microscope observations, nanofiber threads were observed in treatments p0 and p1. However, nanofiber threads were not observed in treatments p2 and p3; therefore further tests were not conducted on these two treatments. SEM (*Scanning Electron Microscope*) observations showed that the size and shape of the threads in treatments p1 and p0 were relatively similar (with sizes <1 µm). FTIR (Fourier-Transform Infrared Spectroscopy) analysis revealed that treatments p0 and p1 had four common functional groups (aliphatic phosphate, aliphatic secondary amine, monosubstituted alkyl, and aliphatic hydrocarbon). Additionally, treatment p0 had one extra functional group, phenol, indicating that the gelatin underwent ionization and released phenol groups. In the solubility test, treatment p1 took longer to dissolve, with a time of 9.33±3.21 seconds, while p0 had a dissolution time of 4.67±0.58 seconds. Among the three test samples, p1 was the best treatment compared to p2 and p3 (based on light microscopy, SEM, FTIR, and solubility tests).

Keywords: bovine, gelatin, fish skin, membran, pullulan