

Puspita Anggun Samudra. NPM 20.03.4.1.1.00108. Karakteristik Fisika, Kimia dan Biologi Edible Film Kombinasi Agar Rumput Laut *Gracilaria* sp. dan Bubuk Gelatin Ikan serta tambahan *essential oil lemongrass* (*Cymbopogon citratus*). Dibawah bimbingan Insafitri, S.T, M.Sc., Ph.D

Edible film merupakan lapisan tipis yang dibuat dari bahan yang dapat dikonsumsi yang digunakan sebagai bahan pengemas ramah lingkungan. Potensi sumber daya laut yang melimpah memiliki peran penting dalam hal mengeksplorasi dan mengembangkan teknologi seperti pembuatan edible film. Rumput laut, khususnya spesies *Gracilaria* sp. dan gelatin ikan telah terbukti sebagai bahan-bahan yang berpotensi untuk digunakan dalam pembuatan edible film. Bahan tersebut memiliki sifat-sifat fisik dan kimia yang cocok, seperti kemampuan pembentukan film yang baik dan kemampuan melekat pada permukaan makanan. Penambahan essential oil ke dalam edible film, dapat meningkatkan karakteristik fisik, kimia, dan fungsional film, termasuk melindungi produk makanan dari kerusakan dan kontaminasi mikroba salah satunya yaitu minyak atsiri serih yang mempunyai sifat antibakteri. Tujuan dari penelitian ini yaitu mengetahui karakteristik edible film dengan bahan dasar agar rumput laut *Gracilaria* sp. dan gelatin ikan dengan tambahan essential oil lemongrass. Rancangan percobaan yang digunakan dalam penelitian ini adalah rancangan acak lengkap (RAL), yaitu konsentrasi antara bahan padatan yang merupakan kombinasi antara agar rumput laut *Gracilaria* sp. dan bubuk gelatin ikan dengan lima taraf perlakuan (S1, S2, S3, S4, dan S5). Dilakukan beberapa uji karakteristik pada sampel edible film yaitu uji ketebalan, kadar air, swelling, kelarutan air, laju transmisi uap air, transparansi, warna, kuat tarik, elongasi, elastisitas, dan uji aktivitas antibakteri. Data yang diperoleh dilakukan uji ANOVA dan uji lanjut Duncan. Hasil edible film berbeda nyata terhadap ketebalan, kadar air, swelling, kelarutan air, transparansi, warna, kuat tarik, elongasi dan elastisitas edible film tetapi tidak berbeda nyata terhadap WVTR (laju transmisi uap air) edible film. Edible film kombinasi terbaik adalah perlakuan S1 (agar100%;gelatin0%) karena hasil analisis uji karakteristik yang dilakukan menghasilkan karakteristik yang paling baik dan paling banyak memenuhi standard.

Kata kunci : Edible film; Gracilaria sp.; Gelatin ikan; Minyak atsiri.

Edible film is a thin layer made from consumable materials that is used as an environmentally friendly packaging material. The potential of abundant marine resources plays an important role in exploring and developing technology, such as making edible films. Seaweed, especially the *Gracilaria* sp. species, and fish gelatin have been proven to be ingredients with the potential to be used in making edible films. These materials have suitable physical and chemical properties, such as good film-forming ability and the ability to adhere to food surfaces. The addition of essential oils to edible film can improve the physical, chemical, and functional characteristics of the film, including protecting food products from damage and microbial contamination. One such essential oil is lemongrass essential oil, which has antibacterial properties. The aim of this research is to determine the characteristics of edible film made from *Gracilaria* sp. seaweed and fish gelatin with added lemongrass essential oil. The experimental design used in this research was a completely randomized design (CRD), specifically focusing on the concentration of solid ingredients, which was a combination of *Gracilaria* sp. seaweed agar and fish gelatin powder at five levels of treatment (S1, S2, S3, S4, and S5). Several characteristic tests were carried out on edible film samples, including thickness, water content, swelling, water solubility, water vapor transmission rate, transparency, color, tensile strength, elongation, elasticity, and antibacterial activity. The data obtained were subjected to ANOVA testing and Duncan's multiple range test. The edible film results showed significant differences in terms of thickness, water content, swelling, water solubility, transparency, color, tensile strength, elongation, and elasticity but did not show significant differences in terms of the water vapor transmission rate (WVTR). The best combination for the edible film was the S1 treatment (100% agar; 0% gelatin) because the characteristic test analysis indicated that it produced the best characteristics and mostly met the standards.

Keywords: *Edible film; Gracilaria sp.; Fish gelatin; Essential oil.*