

## ABSTRAK

### KARAKTERISASI *EDIBLE FILM* BERBAHAN DASAR ALGA COKELAT (*Sargassum* sp.) DENGAN PENAMBAHAN LILIN LEBAH DAN GLISEROL

Penggunaan plastik sebagai kemasan bahan pangan sangat meningkat, sehingga menimbulkan permasalahan lingkungan. Dikembangkanlah bioplastik berupa *edible film* yang mudah terdegradasi di alam. *Edible film* dapat dibuat dengan bahan dasar Na-alginat yang berasal dari alga cokelat *sargassum* sp.. Kelemahan *edible film* Na-alginat yaitu bersifat hidrofilik yang menyebabkan sifat ketahanan airnya rendah, untuk memperbaiki sifat ketahanan air *edible film* ditambahkan lilin lebah. Selain itu untuk memperbaiki sifat mekanik *edible film* ditambahkan gliserol sebagai *plasticizer* agar *edible film* yang dihasilkan menjadi lebih elastis. Metode penelitian ini meliputi tiga tahapan. Pertama, yaitu ekstraksi dan karakterisasi Na-alginat dari alga cokelat. Kedua pembuatan *edible film* dengan penambahan konsentrasi lilin lebah yaitu 0%, 0,3%, 0,5%, 0,7%, 0,9% dan 1,1% (b/v). Terakhir, karakterisasi *edible film* dengan sifat mekanik (uji tarik, elongasi dan *modulus young*), uji ketahanan air (*water up take*), FTIR dan SEM. Hasil karakterisasi Na-alginat hasil ekstraksi diperoleh rendemen 18,48%, kadar air 3,69%, dan kadar abu 20,19%. Penambahan lilin lebah pada *edible film* mempengaruhi karakterisasi *edible film* yang dihasilkan. Semakin besar konsentrasi lilin lebah maka semakin besar pula sifat ketahanan air *edible film* tersebut. Elastitas *edible film* mengalami penurunan, semakin besar konsentrasi lilin lebah maka semakin kecil nilai yang dihasilkan. Hasil FTIR hanya menunjukkan interaksi secara fisika yang terjadi dalam *edible film* yang dihasilkan dan morfologi *edible film* dengan SEM untuk mengetahui kehomogenan campuran.

Kata-kata kunci: Na-alginat, *Edible film*, Lilin lebah, Gliserol, Sifat mekanik.

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## ABSTRACT

### CHARACTERIZATION OF EDIBLE FILM BASED ON CHOCOLATE ALGAE (*Sargassum* sp.) WITH ADDITION OF BEE WAX (BEESWAX) AND GLYCEROL

*The use of plastic as a packaging for food has greatly increased, which has caused environmental problems. Bioplastics are developed in the form of edible films that are easily degraded in nature. Edible films can be made with the basic ingredients of Na-alginate from brown algae sargassum sp. Weakness of edible film Na-alginate which is hydrophilic which causes low water resistance properties, to improve the water resistance properties of edible film beeswax is added. In addition to improving the mechanical properties of edible film, glycerol is added as plasticizer so that the resulting edible film becomes more elastic. This research method includes three stages. First, namely the extraction and characterization of Na-alginate from brown algae. The second production of edible film with the addition of beeswax concentration is 0%, 0.3%, 0.5%, 0.7%, 0.9% and 1.1% (b / v). Finally, the characterization of edible films with mechanical properties (tensile test, elongation and modulus young), water up take, FTIR and SEM. The results of the characterization of Na-alginate extracted obtained yield 18.48%, water content 3.69%, and ash content 20.19%. The addition of beeswax to edible film affects the characterization of the edible film produced. The greater the concentration of beeswax, the greater the resistance of edible water to the film. The elasticity of edible film has decreased, the greater the concentration of beeswax, the smaller the value produced. FTIR results only show the physical interactions that occur in the edible film produced and the morphology of edible film with SEM to determine the homogeneity of the mixture.*

*Keywords: Na-alginate, Edible film, beeswax, glycerol, mechanical properties.*

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