

Ringkasan

Bahan pengemas digunakan bertujuan untuk melindungi produk pangan hingga sampai ke tangan konsumen. Ada berbagai macam bahan pengemas, salah satunya adalah plastik. Plastik menjadi pilihan utama karena memiliki keunggulan yaitu ringan, tahan terhadap perubahan cuaca, transparan, dan harganya terjangkau. Plastik memiliki kekurangan yaitu membutuhkan waktu yang lama untuk terurai dan dapat menimbulkan pencemaran lingkungan, sehingga diperlukan bahan alternatif pengemas yang bersifat lebih ramah terhadap lingkungan dan dapat terurai dalam waktu singkat. Salah satu alternatifnya yaitu bioplastik. Tujuan dari penelitian ini: 1) Mengetahui karakteristik bioplastik berbahan dasar mocaf (*Modified Cassava Flour*) dengan berbagai konsentrasi *plasticizer* sorbitol, 2) Mengetahui karakteristik bioplastik berbahan dasar mocaf (*Modified Cassava Flour*) dengan penambahan berbagai konsentrasi ekstrak serai wangi, 3) Mengetahui pengaruh konsentrasi *plasticizer* sorbitol dan penambahan berbagai konsentrasi ekstrak serai wangi terhadap karakteristik bioplastik.

Rancangan yang digunakan dalam penelitian ini adalah Rancangan Acak Kelompok (RAK) yang terdiri dari dua faktor, yaitu konsentrasi *plasticizer* sorbitol (P1 = 3,5%; P2 = 4%; P3 = 4,5%) dan konsentrasi ekstrak serai wangi (S1 = 25%; S2 = 30%; S3 = 35%). Variabel yang diamati dalam penelitian ini ada tujuh pengujian, yaitu uji antimikroba terhadap *Escherichia coli* dan *Staphylococcus aureus*, laju transmisi uap air, uji biodegradabilitas, transparansi, ketebalan, kecerahan, dan kadar air. Data hasil pengamatan yang diperoleh dianalisis menggunakan analisis ragam (ANOVA) pada tingkat kepercayaan 95%, apabila terdapat pengaruh yang nyata maka dilanjutkan dengan uji DMRT (*Duncan's Multiple Range Test*).

Hasil penelitian menunjukkan makin tinggi konsentrasi *plasticizer* sorbitol dapat meningkatkan ketebalan, kecerahan, biodegradabilitas, serta menurunkan laju transmisi uap air, dan zona hambat *Staphylococcus aureus*. Makin tinggi konsentrasi ekstrak serai wangi yang ditambahkan dapat menurunkan kecerahan, transparansi, serta meningkatkan kadar air, uji antimikroba *Escherichia coli*, dan zona hambat *Staphylococcus aureus*. Interaksi perlakuan konsentrasi sorbitol dengan konsentrasi ekstrak serai wangi cenderung menurunkan laju transmisi uap air dan transparansi.

Kata kunci: bioplastik, mocaf, sorbitol, ekstrak serai wangi

Summary

Packaging materials are used to protect food products until they reach consumers. There are various kinds of packaging materials, one of which is plastic. Plastic is the main choice because it has the advantages of being lightweight, resistant to weather changes, transparent, and affordable. Plastic has the disadvantage that it takes a long time to decompose and can cause environmental pollution, so alternative packaging materials are needed that are more environmentally friendly and can be decomposed in a short time. One of the alternatives is bioplastic. The objectives of this research: 1) Knowing the characteristics of bioplastics made from mocaf (Modified Cassava Flour) with various concentrations of sorbitol plasticizer, 2) Knowing the characteristics of bioplastics made from mocaf (Modified Cassava Flour) with the addition of various concentrations of citronella extract, 3) Knowing the effect of sorbitol plasticizer concentration and the addition of various concentrations of citronella extract on the characteristics of bioplastics.

*The design used in this research is a Randomized Group Design (RGD) consisting of two factors, namely the concentration of sorbitol plasticizer (P1 = 3.5%; P2 = 4%; P3 = 4.5%) and the concentration of citronella extract (S1 = 25%; S2 = 30%; S3 = 35%). There were seven variables observed in this study, namely antimicrobial test against *Escherichia coli* and *Staphylococcus aureus*, water vapor transmission rate, biodegradability test, transparency, thickness, brightness, and water content. The observation data obtained were analyzed using analysis of variance (ANOVA) at the 95% confidence level, if there was a significant effect then continued with the DMRT (Duncan's Multiple Range Test) test.*

*The results showed that the higher the concentration of sorbitol plasticizer can increase thickness, brightness, biodegradability, as well as reduce the water vapor transmission rate, and inhibition zone of *Staphylococcus aureus*. The higher concentration of citronella extract added can reduce brightness, transparency, and increase moisture content, *Escherichia coli* antimicrobial test, and *Staphylococcus aureus* inhibition zone. The interaction of sorbitol concentration with citronella extract concentration tended to decrease the water vapor transmission rate and transparency.*

Keywords: bioplastic, mocaf, sorbitol, citronella extract