

RINGKASAN

Biodegradable film dikembangkan sebagai alternatif pengemas plastik. *Biodegradable film* dapat dibuat dari pati garut, pati ubi jalar, dan *hydroxypropyl methylcellulose* (HPMC). *Biodegradable film* berbasis polisakarida memiliki kelemahan yaitu mudah rapuh sehingga perlu ditambahkan *plasticizer* untuk meningkatkan fleksibilitas *film*. Tujuan dari penelitian ini yaitu 1. Mengetahui pengaruh jenis bahan terhadap karakteristik kimia, fisik, dan sensoris *biodegradable film*. 2. Mengetahui pengaruh jenis *plasticizer* terhadap karakteristik kimia, fisik, dan sensoris *biodegradable film*. 3. Mengetahui pengaruh konsentrasi *plasticizer* terhadap karakteristik kimia, fisik, dan sensoris *biodegradable film*. 4. Mengetahui pengaruh interaksi faktor jenis bahan, jenis *plasticizer*, dan konsentrasi *plasticizer* terhadap karakteristik kimia, fisik, dan sensoris *biodegradable film*.

Penelitian ini menggunakan Rancangan Acak Lengkap (RAL). Faktor yang diteliti meliputi jenis bahan (P) terdiri dari pati garut (P1), pati ubi jalar (P2), dan HPMC (P3); jenis *plasticizer* (Q) terdiri dari gliserol (Q1) dan sorbitol (Q2); serta konsentrasi *plasticizer* (R) terdiri dari 4% (R1), 6% (R2), dan 8% (R3). Variabel yang diamati terdiri dari variabel kimia (kadar air dan kadar abu), fisik (ketebalan dan kelarutan), dan sensoris (kejernihan, warna, aroma, tekstur, dan kesukaan). Data variabel kimia dan fisik dianalisis menggunakan uji ANOVA dan uji lanjut *Duncan Multiple Range Test* taraf 5%. Data variabel sensoris dianalisis menggunakan metode statistika deskriptif.

Hasil penelitian menunjukkan bahwa (1) *Film* pati ubi jalar dan pati garut memiliki kadar abu, ketebalan, dan kelarutan lebih rendah dibandingkan HPMC. (2) *Plasticizer* sorbitol menghasilkan *film* dengan kadar air lebih rendah dibandingkan *plasticizer* gliserol. (3) Pada konsentrasi 4-8%, semakin tinggi konsentrasi *plasticizer*, maka kelarutan akan meningkat. (4) Interaksi antara jenis bahan, jenis *plasticizer*, dan konsentrasi *plasticizer* tidak memberikan perbedaan terhadap karakteristik kimia, fisik, dan sensori *biodegradable film* yang dihasilkan.

SUMMARY

The biodegradable film is developed as an alternative to plastic packaging. The biodegradable film can be made from arrowroot starch, sweet potato starch, and hydroxypropyl methylcellulose (HPMC). The polysaccharide-based biodegradable film has a weakness. It produces a brittle biodegradable film. Therefore, it needs plasticizer to increase the flexibility of the film. The aim of the research is 1. To study the effect of material type on chemical, physical, and sensory characteristic of the biodegradable film. 2. To study the effect of plasticizer type on chemical, physical, and sensory characteristic of the biodegradable film. 3. To study the effect of plasticizer concentration on chemical, physical, and sensory characteristic of the biodegradable film. 4. To study the effect of interaction between material type, plasticizer type, and plasticizer concentration on chemical, physical, and sensory characteristic of the biodegradable film.

The research used Completely Randomized Design Factorial, with three factors: material type (P) (arrowroot starch (P1); sweet potato starch (P2); hydroxypropyl methylcellulose (P3)), plasticizer type (Q) (glycerol (Q1); sorbitol(Q2)), and plasticizer concentration (R) (4% (R1); 6% (R2); 8% (R3)). The observation of biodegradable film consists of a chemical variable (moisture content and ash content), physical variable (thickness and solubility), and sensory variable (clarity; color; aroma, texture; and preference). Data of chemical and physical variable were analyzed using the ANOVA test, if the effect is noticeable, the test will be continued using Duncan Multiple Range Test at the 5% level of significance. Data of sensory variable were analyzed using descriptive statistic analysis.

The result shows that (1) Sweet potato and arrowroot starch film indicates a lower value of ash content, thickness, and solubility than HPMC (2) Sorbitol indicates a lower value of moisture content than glycerol. (3) At 4-8% plasticizer concentration, the higher level of concentration indicates a higher of solubility. (4) The interaction between material type, plasticizer type, and plasticizer concentration didn't indicate any differences in chemical, physical, and sensory characteristic of the biodegradable film.