

**KARAKTERISTIK FISIK DAN MEKANIK *EDIBLE FILM* PATI
GANYONG (*Canna edulis* Kerr) DENGAN *PLASTICIZER* DARI
GLISEROL MINYAK JELANTAH**

INTISARI

Kemasan pangan yang beredar dipasaran merupakan polimer sintetik yang sulit didegradasi oleh mikroba tanah. *Edible film* merupakan salah satu alternatif kemasan yang *biodegradable*. Pati ganyong digunakan sebagai bahan baku dalam pembuatan *edible film*. Gliserol dari minyak jelantah ditambahkan sebagai *plasticizer* untuk memperbaiki sifat fisik mekanik *edible film*. Penelitian ini bertujuan untuk mengetahui karakteristik gliserol dari minyak jelantah dan pengaruhnya terhadap sifat fisik mekanik *edible film* pati ganyong.

Rancangan percobaan yang digunakan dalam penelitian ini adalah Rancangan Acak Lengkap (RAL) dengan dua faktor perlakuan yaitu variasi konsentrasi pati ganyong (2% b/v dan 4% b/v) dan variasi konsentrasi gliserol dari minyak jelantah (2% b/v; 4% b/v dan 6% b/v). Pengujian karakteristik gliserol dari minyak jelantah meliputi kadar air, kadar abu, densitas, pH, viskositas, dan kadar gliserol. Pengujian karakteristik fisik mekanik *edible film* meliputi ketebalan, kuat tarik, persen pemanjangan dan laju transmisi uap air.

Hasil penelitian menunjukkan gliserol dari minyak jelantah telah memenuhi standar SNI 06-1564-1995 dengan nilai kadar air sebesar 1,43%bb, kadar abu 6,39%bk, warna jernih kekuningan, dan kadar gliserol 91,81%bb. Penambahan pati ganyong dan gliserol dari minyak jelantah berpengaruh nyata terhadap karakteristik fisik dan mekanik *edible film* yaitu ketebalan, kuat tarik, persen pemanjangan dan laju transmisi uap air. Karakteristik fisik dan mekanik *edible film* terbaik diperoleh dengan perlakuan penambahan pati ganyong 4% dan gliserol minyak jelantah 2% dengan nilai ketebalan 0,12 mm, kuat tarik 0,56 N/mm², persen pemanjangan 30,93% dan laju transmisi uap air 5,10 g/m²/hari yang telah memenuhi standar JIS (*Japanese Industrial Standar*).

Kata Kunci : *edible film*, pati ganyong, gliserol minyak jelantah, *plasticizer*

**PHYSICAL AND MECHANICAL CHARACTERISTICS OF EDIBLE
FILM FROM CANNA (*Canna edulis* Kerr) STARCH WITH PLASTICIZER
FROM WASTE COOKING OIL GLYCEROL**

ABSTRACT

Commercial food packaging is a synthetic polymer which is hardly to degradable by soil microbes. Edible film is an alternative biodegradable food packaging. Canna starch is used as raw material for making edible film. Glycerol from waste cooking oil added as plasticizer to improve physic and mechanic properties of edible film. This study aims to determine the characteristics of glycerol from waste cooking oil and effect on the physic and mechanic properties of canna starch edible film.

The experimental design used in this study is completely randomized design (RAL) with two factors which is the first factor variation concentration of canna starch (2% w/v and 4% w/v) and the second factor is a variation glycerol from waste cooking oil (2% w/v; 4% w/v and 6% w/v). The analysis conducted in this study is characteristics of glycerol from waste cooking oil includes moisture content, ash content, density, pH, viscosity, and glycerol content. Testing the physic and mechanic properties of edible film include thickness, tensile strength, elongation, and water vapor transmission rate.

The results showed that glycerol from waste cooking oil match with SNI 06-1564-1995 standards, value of water content is 1,43% wb, ash content is 6,39% db, a clear yellowish color, and a glycerol content score 91,81% wb. The addition of canna starch and glycerol from waste cooking oil had a significant effect on the physic and mechanic characteristics of the edible film, that is thickness, tensile strength, elongation and water vapor transmission rate. The best physical and mechanical characteristics of edible film were obtained by the addition of 4% canna starch and 2% glycerol from waste cooking oil with a thickness value of 0,12 mm, tensile strength 0,56N/mm², elongation 30,93% and water vapor transmission rate 5,10g/m²/day has fulfilled with Japanese Industrial Standard (JIS).

Keywords : edible film, canna starch, glycerol from waste cooking oil, plasticizer