

**KARAKTERISTIK SIFAT FISIK EKSTRUDAT BERBAHAN DASAR
GRIT JAGUNG DAN TEPUNG KANGKUNG DENGAN PERLAKUAN
SUHU *BARREL* DAN KADAR AIR AWAL BAHAN MENGGUNAKAN
EKSTRUDER ULIR GANDA**

INTISARI

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Kangkung (*Ipomoea aquatica* dan *Ipomoea reptans*) merupakan sayuran hijau kaya nutrisi yang berpotensi diolah menjadi produk pangan fungsional. Meskipun keberlimpahan produksi kangkung mencapai 311.722 ton pada tahun 2024, konsumsi sayuran di Indonesia masih di bawah standar yang direkomendasikan oleh WHO, sehingga diperlukan inovasi untuk meningkatkan penerimaan. Teknologi ekstrusi memungkinkan pengolahan tepung kangkung menjadi camilan sehat dengan tekstur renyah dan rasa yang disesuaikan. Penelitian ini bertujuan untuk mengkaji pengaruh kadar air bahan dan suhu *barrel* mesin ekstruder terhadap karakteristik fisik ekstrudat yang terbuat dari campuran grit jagung dan tepung kangkung. Proses ekstrusi dilakukan dengan ekstruder ulir ganda (SYSLG-IV) dengan variasi kadar air bahan (12%, 14%, dan 16%) serta suhu *barrel* (120°C, 135°C, dan 150°C). Analisis data dilakukan menggunakan metode ANOVA dan TOPSIS. Peningkatan kadar air bahan menunjukkan korelasi positif terhadap kadar air ekstrudat, *particle density*, *bulk density*, dan kekerasan, tetapi berkorelasi negatif terhadap rasio ekspansi, *water absorption index* (WAI), *water solubility index* (WSI), *lightness*, *redness*, dan *yellowness*. Sebaliknya, peningkatan suhu *barrel* meningkatkan rasio ekspansi dan *lightness*, tetapi menurunkan kadar air ekstrudat, *particle density*, *bulk density*, kekerasan, *water absorption index* (WAI), *water solubility index* (WSI), *redness*, dan *yellowness* ekstrudat. Sampel dengan karakteristik terbaik diperoleh pada perlakuan kadar air 12% dan suhu *barrel* 150°C, baik sebelum maupun setelah pengeringan.

Kata kunci: ekstrusi, grit jagung, tepung kangkung, ekstrudat, suhu

**PHYSICAL CHARACTERISTICS OF EXTRUDATES BASED ON CORN
GRITS AND KANGKUNG FLOUR UNDER BARREL TEMPERATURE
AND INITIAL MOISTURE CONTENT TREATMENTS USING A TWIN
SCREW EXTRUDER**

ABSTRACT

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Kangkung (*Ipomoea aquatica* and *Ipomoea reptans*) is a nutrient-rich green vegetable with potential for processing into functional food products. Despite a production volume of 311,722 tons in 2024, vegetable consumption in Indonesia remains below the WHO-recommended standard, necessitating innovations to enhance acceptance. Extrusion technology enables kangkung flour to be processed into a healthy snack with a crispy texture and customizable taste. This study aims to examine the effect of raw material moisture content and extruder barrel temperature on the physical characteristics of extrudates made from a mixture of corn grits and kangkung flour. The extrusion process was conducted using a twin-screw extruder (SYSLG-IV) with variations in moisture content (12%, 14%, and 16%) and barrel temperature (120°C, 135°C, and 150°C). Data analysis was performed using ANOVA and TOPSIS methods. An increase in raw material moisture content correlated positively with extrudate moisture content, particle density, bulk density, and hardness, but negatively with expansion ratio, water absorption index (WAI), water solubility index (WSI), lightness, redness, and yellowness. Conversely, higher barrel temperatures improved the expansion ratio and lightness but reduced extrudate moisture content, particle density, bulk density, hardness, WAI, WSI, redness, and yellowness. The optimal sample characteristics were obtained with an initial moisture content of 12% and a barrel temperature of 150°C, both before and after drying.

Keywords: extrusion, corn grits, kangkung flour, extrudate, temperature