

## SIFAT FISIK EKSTRUDAT BERBAHAN DASAR GRIT JAGUNG DAN TEPUNG *MOCAF* YANG DIPRODUKSI DENGAN PERLAKUAN KADAR AIR DAN SUHU *BARREL*

### INTISARI

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Jagung dan singkong merupakan komoditas pangan utama di Indonesia dengan tingkat produksi yang tinggi. Namun, pemanfaatan jagung dan singkong dalam industri pangan masih belum optimal. Singkong, khususnya tepung *mocaf* belum memiliki inovasi pengolahan yang berkembang. Salah satu bentuk pengolahan yang dapat meningkatkan nilai tambah kedua komoditas tersebut adalah pengolahan dengan teknologi ekstrusi. Tujuan utama dari penelitian ini adalah untuk mengkaji pengaruh kadar air awal bahan dan suhu *barrel* pada proses ekstrusi terhadap sifat fisik ekstrudat berbahan dasar grit jagung dan tepung *mocaf*. Penelitian ini menggunakan metode eksperimental dengan rancangan perlakuan yang terdiri dari tiga tingkat perlakuan kadar air awal bahan (14%, 16%, dan 18%), serta tiga tingkat perlakuan suhu ujung *barrel* (120°C, 130°C, dan 140°C). Sifat fisik ekstrudat yang diukur meliputi kadar air, rasio ekspansi, *bulk density*, *particle density*, warna, *water absorption index*, *water solubility index*, dan kekerasan ekstrudat.

Hasil penelitian menunjukkan bahwa perlakuan kadar air awal bahan sangat berpengaruh terhadap sifat fisik ekstrudat. Perlakuan suhu ujung *barrel* memiliki pengaruh yang signifikan di beberapa sampel saja. Nilai kadar air ekstrudat siap makan berkisar 0,75-3,36 %wb, rasio ekspansi berkisar 2,74- 3,29 kali lipat, *bulk density* berkisar 0,089-0,173 g/cm<sup>3</sup>, *particle density* berkisar 0,141-0,254 g/cm<sup>3</sup>, L\* berkisar 93,803-97,863, a\* berkisar -17,445 hingga -16,065, b\* berkisar 46,960-51,009, WAI berkisar 6,411-7,158, WSI berkisar 0,032-0,063, dan nilai kekerasan berkisar 0,216-0,498 N/mm<sup>2</sup>.

Kata kunci: teknologi ekstrusi, grit jagung, tepung *mocaf*, kadar air, suhu *barrel*, sifat fisik.

## **PHYSICAL CHARACTERISTICS OF EXTRUDATES BASED ON CORN GRITS AND MOCAF FLOUR WHICH IS PRODUCED WITH FEED MOISTURE CONTENT AND BARREL TEMPERATURE TREATMENTS**

### **ABSTRACT**

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Corn and cassava are major food commodities in Indonesia, with high production levels. However, the utilization of corn and cassava in the food industry remains suboptimal. Cassava, particularly in the form of Mocaf (Modified Cassava Flour) has not yet undergone significant processing innovations. One form of processing that can enhance the added value of both commodities is extrusion technology. The primary objective of this study is to examine the effects of initial feed moisture content and barrel temperature during the extrusion process on the physical characteristics of extrudates made from corn grits and Mocaf flour. This study employed an experimental method with a treatment design consisting of three levels of initial feed moisture content (14%, 16%, and 18%) and three levels of barrel tip temperature (120°C, 130°C, and 140°C). The physical properties of the extrudates analyzed included moisture content, expansion ratio, bulk density, particle density, color, water absorption index (WAI), water solubility index (WSI), and hardness.

The results of the study indicated that the initial feed moisture content had a significant effect on the physical properties of the extrudates. Barrel tip temperature treatment showed a significant influence only on certain samples. The moisture content of the ready-to-eat extrudates ranged from 0.75-3.36 %wb, expansion ratio ranged from 2.74-3.29 times, bulk density ranged from 0.089-0.173 g/cm<sup>3</sup>, particle density ranged from 0.141-0.254 g/cm<sup>3</sup>, L values ranged from 93.803-97.863, a\* values ranged from -17.445 to -16.065, b\* values ranged from 46.960-51.009, water absorption index (WAI) ranged from 6.411-7.158, water solubility index (WSI) ranged from 0.032-0.063, and hardness ranged from 0.216-0.498 N/mm<sup>2</sup>.

**Keywords:** extrusion technology, corn grits, mocaf, moisture content, barrel temperature, physical characteristics.