

KARAKTERISTIK FISIK EKSTRUDAT BERBAHAN DASAR GRIT JAGUNG DAN TEPUNG KACANG KEDELAI DENGAN PERLAKUAN KADAR AIR DAN SUHU *BARREL*

INTISARI

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Salah satu cara pencegahan stunting adalah dengan mengonsumsi makanan ringan bernutrisi tinggi yang dapat diproduksi dengan proses ekstrusi. Bahan dasar yang dapat digunakan harus mengandung karbohidrat tinggi seperti jagung. Namun, jagung tidak memiliki banyak nutrisi sehingga diperlukan penambahan bahan tepung kacang kedelai yang kaya protein. Tujuan penelitian ini yaitu menganalisis pengaruh suhu *barrel* dan kadar air awal bahan terhadap karakteristik fisik ekstrudat. Proses ekstrusi dilakukan menggunakan alat ekstruder *twin-screw* dengan kapasitas 5-10kg dengan perlakuan suhu *barrel* (120, 130, 140°C) dan kadar air awal bahan (14, 16, 18%) sebanyak tiga kali ulangan. Sifat fisik ekstrudat yang diukur yaitu kadar air, rasio ekspansi, *bulk density*, *particle density*, warna, *water absorption index*, *water solubility index*, dan kekerasan. Analisis yang dilakukan pada penelitian ini yaitu *two way ANOVA* dan *Techniq for Order of Preference by Similarity to Ideal Solution*. Hasil penelitian menunjukkan perlakuan suhu *barrel* dan kadar air awal bahan berpengaruh terhadap sifat fisik ekstrudat. Peningkatan kadar air awal bahan cenderung meningkatkan kadar air ekstrudat, *bulk density*, *particle density*, *chroma*, *hue angle*, *yellowness*, *redness* dan kekerasan. Sedangkan, peningkatan kadar air awal bahan cenderung menurunkan nilai WAI, WSI, *lightness*, dan rasio ekspansi. Peningkatan suhu *barrel* cenderung meningkatkan rasio ekspansi, *lightness*, *redness*, *yellowness*, dan *chroma*. Peningkatan suhu *barrel* cenderung menurunkan *particle density*, *bulk density*, kadar air, kekerasan, dan *hue angle*.

Kata kunci: ekstrusi, grit jagung, kadar air, karakteristik fisik, suhu *barrel*, tepung kacang kedelai

PHYSICAL CHARACTERISTIC OF CORN GRIT AND SOYBEAN FLOUR BASED EXTRUDATE WITH WATER CONTENT AND BARREL TEMPERATURE TREATMENT

ABSTRACT

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One way to prevent stunting is eating highly nutrition snacks that can be produced by an extrusion process. The basic ingredients that can be used must contain high carbohydrates such as corn. However, corn does not have many nutrients, so it is necessary to add protein-rich soybean flour. The purpose of this study was to analyze the effect of barrel temperature and initial moisture content of the material on the physical characteristics of the extrudate. The extrusion process was carried out using a twin-screw extruder with a capacity of 5-10kg with barrel temperature treatments (120, 130, 140°C) and initial material moisture content (14, 16, 18%) for three repetitions. The physical properties of extrudates measured were water content, expansion ratio, bulk density, particle density, color, water absorption index, water solubility index, and hardness. The analysis carried out in this study is two-way ANOVA and *Technique for Order of Preference by Similarity to Ideal Solution*. The results showed that the treatment of barrel temperature and initial moisture content of the material affected the physical properties of the extrudate. Increasing the initial water content of the material tends to increase the extrudate water content, bulk density, particle density, chroma, hue angle, yellowness, redness, and hardness. Meanwhile, an increase in the initial moisture content of the material tends to decrease the value of WAI, WSI, lightness, and expansion ratio. Increasing the barrel temperature tends to increase the expansion ratio, lightness, redness, yellowness, and chroma. Increasing barrel temperature tends to decrease particle density, bulk density, moisture content, hardness, and hue angle.

Keywords: barrel temperature, corn grit, extrusion, moisture content, physical characteristics, soybean flour

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