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

INTISARI

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Pencegahan stunting salah satunya dapat dilakukan dengan penambahan protein melalui makanan ringan ekstrudat. Makanan ringan ekstrudat biasanya hanya terbuat dari jagung yang rendah protein sehingga penambahan kacang merah dapat meningkatkan kandungan protein makanan ringan. Kualitas ekstrudat dipengaruhi oleh variabel proses ekstrusi seperti suhu *barrel* dan kadar air awal bahan. Oleh karena itu, penelitian ini bertujuan untuk mengkaji kualitas ekstrudat berupa sifat fisik ekstrudat dengan perlakuan suhu ekstrusi dan kadar air awal bahan. Kacang merah dan grit jagung dicampurkan dengan perbandingan 20% kacang merah dan 80% grit jagung dengan 3 level kadar air awal bahan (14-18% w.b) dan suhu *barrel* (120-140°C). Analisis data yang digunakan meliputi ANOVA dan TOPSIS. Campuran tepung kemudian diekstrusi menggunakan *twin screw extruder*. Peningkatan kadar air dan penurunan suhu menyebabkan penurunan rasio ekspansi (2,28-3,10), nilai *lightness* (76,14-79,71), dan WSI (5,59 – 9,04%) serta peningkatan *particle density* (0,16-0,39 g/cm^3), *bulk density* (0,12-0,25 g/cm^3), kekerasan (14,33-54,12 N), dan kadar air (6,05-12,69%). Perlakuan dengan preferensi terbaik yang diperoleh adalah kadar air campuran 14% dan suhu ekstrusi 140°C sebelum dikeringkan.

Kata kunci : grit jagung, kacang merah, karakteristik fisik, *twin screw extruder*

EFFECTS OF MOISTURE CONTENT AND BARREL TEMPERATURE ON PHYSICAL CHARACTERISTICS OF CORN GRIT AND RED BEAN MIXTURE BASED EXTRUDATE

ABSTRACT

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One of the way to prevent stunting can be done by adding protein through extruded snacks. Extruded snacks are usually only made from corn which is low in protein so the addition of red beans can increase the protein content of the snacks. Extrudate quality is affected by extrusion process variables such as barrel temperature and initial moisture content of the material. Therefore, this study aims to examine the effect of barrel temperature and initial moisture content of the material to the quality of extrudates in the form of physical properties of extrudates. Red bean and corn grits are mixed in a ratio of 20% with 3 levels of initial moisture content (14-18% w.b) and barrel temperature (120-140°C). ANOVA and TOPSIS are used to analyze the data. The flour mixture is then extruded using a twin screw extruder. An increase in moisture content and a decrease in barrel temperature causes a decrease in the expansion ratio (2,28-3,10), lightness value (76,14-79,71), and WSI (5,59 – 9,04%) also an increase in particle density (0,16-0,39 g/cm^3), bulk density (0,12-0,25 g/cm^3), hardness (14,33-54,12 N) and extrudate moisture content (6,05-12,69%). The treatment with the best preference was obtained at initial moisture content of 14% and barrel temperature of 140°C.

Keyword: corn grit, red bean, physical characteristics, twin screw extruder