

KARAKTERISTIK FISIK EKSTRUDAT DENGAN PERLAKUAN KOMPOSISI BAHAN GRIT JAGUNG-TEPUNG KEDELAH DAN SUHU BARREL EKSTRUDER

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INTISARI

Jagung (*Zea mays L.*) merupakan bahan dasar dalam pembuatan makanan ringan *ready-to-eat* yang populer di Indonesia, namun memiliki mutu nutrisi yang rendah sehingga peranan bahan tambahan kacang-kacangan dapat menjadi suplemen protein. Penelitian ini bertujuan untuk mengetahui pengaruh komposisi tepung kedelai dan suhu silinder terhadap sifat fisik ekstrudat. Bahan menggunakan grit jagung (710 μm) dan tepung kedelai (500 μm). Produksi ekstrudat menggunakan mesin *co-rotating intermeshing twin screw extruder*. Rancangan percobaan menggunakan 2 faktorial, yaitu faktor komposisi tepung kedelai (10%, 20%, dan 30%,) dan suhu akhir silinder (120°C, 130°C, dan 140°C). Parameter sifat fisik ekstrudat meliputi rasio pengembangan, *bulk density*, *particle density*, kekerasan, kadar air, *water absorption index*, *water solubility index*, dan warna. Hasil menunjukkan bahwa meningkatnya komposisi tepung kedelai dapat menurunkan sifat ekspansi sehingga memiliki kerapatan (*bulk density* dan *particle density*) dan tekstur bahan yang tinggi. Warna (*yellowness* dan *Chroma*) meningkat seiring meningkatnya komposisi tepung kedelai dan menurunnya suhu silinder. Nilai *lightness* berada pada rentang 75,39-92,88. Nilai *hue angle* menunjukkan ekstrudat berwarna merah kekuningan (64,91-84,91). *Water absorption index* menurun seiring meningkatnya komposisi tepung kedelai dan suhu silinder, namun *water solubility index* semakin meningkat. Dengan demikian, tingkat preferensi konsumen menunjukkan perlakuan penambahan tepung kedelai 20% dengan suhu barrel 140°C menghasilkan makanan ringan sifat fisik yang baik.

Kata kunci: grit jagung, tepung kedelai, ekstruder ulir ganda, sifat fisik ekstrudat

PHYSICAL CHARACTERISTICS OF EXTRUDED MAIZE GRIT- SOYBEAN FLOUR BY INFLUENCE OF FEED COMPOSITION AND BARREL TEMPERATURE

ABSTRACT

Maize (*Zea mays L.*) is a basic ingredient in the manufacture of snack ready-to-eat that are popular in Indonesia but has low nutritional quality. Thus, the role of legume addition can be a protein supplement. This study aimed to determine the influence of soybean flour ratio and barrel temperature on the physical properties of extrudates. The materials used were maize grit (710 μm) and soybean flour (500 μm). Extrudate samples were produced using a co-rotating intermeshing twin screw extruder. The experimental design used 2 factorials, such as the soybean flour ratio (10%, 20%, and 30%,) and barrel temperature (120°C, 130°C, and 140°C) as a factor. The effect of parameters on expansion ratio, bulk density, particle density, hardness, moisture content, water absorption index, water solubility index, and color of the extrudates were determined. The results showed that increasing the ratio of soybean flour can decrease the expansion ratio, thus it has an increased density (bulk density and particle density) and texture of the extrudate. Color (b^* and Chroma) increased as the soybean flour ratio increased and barrel temperature decreased. The lightness value is in the range of 75.39-92.88. Hue angle values showed yellow-red extrudates (64.91-84.91). The water absorption index decreased as the soybean flour ratio and barrel temperature increased, but water solubility index increased. Therefore, the level of consumer preference shows that the feed composition of adding 20% soybean flour with a barrel temperature of 140°C produces snacks with improved physical properties.

Keywords: maize grit, soy flour, twin screw extruder, physical properties