KARAKTERISTIK FISIK EKSTRUDAT PADA CAMPURAN *GRITS* JAGUNG-TEPUNG SORGUM PUTIH DENGAN PERLAKUAN KADAR AIR DAN SUHU *BARREL* DENGAN EKSTRUDER ULIR GANDA

INTISARI

Oleh:
RAFAA ZAHRA SYARUFA
20/463646/TP/12924

Ekstrudat merupakan produk makanan ringan yang diproduksi melalui proses ekstrusi. Bahan baku yang digunakan untuk proses ekstrusi biasanya memiliki kadar pati yang tinggi atau biji-bijian sereal, seperti jagung, gandum, beras, dan lainnya yang berperan pada proses ekspansi langsung selama ekstrusi. Ekstrusi termasuk dalam proses pengolahan pangan HTST (*high temperature short time*) yakni proses pengolahan pangan yang hanya membutuhkan waktu singkat dengan suhu tinggi, pada ekstrusi HTST juga melibatkan tekanan tinggi agar diperoleh produk yang terekspansi. Kualitas ekstrudat dipengaruhi oleh faktor kadar air awal bahan dan suhu *barrel* sehingga penelitian ini bertujuan untuk mengkaji kualitas ekstrudat berupa karakteristik fisik ekstrudat dengan perlakuan kadar air awal bahan dan suhu *barrel*. Karakteristik fisik ekstrudat tersebut, yaitu rasio ekspansi, *bulk density, particle density, water absorption index* (WAI), *water solubility index* (WSI), warna, kekerasan, dan porositas. *Grits* jagung dan tepung sorgum putih dicampurkan dengan komposisi tepung sorgum putih sebesar 10% dan *grits* jagung sebesar 90% dengan variasi kadar air awal bahan 12%, 14%, 16%, dan 18% serta suhu *barrel* 120, 130, dan 140°C. Data dianalisis dengan metode ANOVA dan TOPSIS (*Technique for Order of Preference by Similarity to Ideal Solution*). Campuran kedua bahan kemudian diekstrusi menggunakan *twin screw extruder*. Peningkatan kadar air awal bahan meningkatkan kadar air ekstrudat, *bulk density, particle density*, kekerasan, WAI, dan *redness*. Peningkatan suhu *barrel* meningkatkan rasio ekspansi dan *redness* sedangkan kadar air ekstrudat, *bulk density, particle density*, kekerasan, WAI, WSI, *lightness*, dan *yellowness* menurun.

Kata kunci: ekstrudat, jagung, kadar air, suhu, sorgum

EFFECT OF MOISTURE CONTENT AND BARREL TEMPERATURE ON PHYSICAL CHARACTERISTICS OF CORN GRITS AND WHITE SORGHUM FLOUR-BASED EXTRUDATES

ABSTRACT

BY:
RAFAA ZAHRA SYARUFA
20/463646/TP/12924

Extrudates are snack products that produced through an extrusion process. The raw materials used for the extrusion process usually have high starch content or cereal grains, such as corn, wheat, rice, and others that play a role in the direct expansion process during extrusion. Extrusion is included in the HTST (high temperature short time) food processing process, which is a food processing process that only requires a short time with high temperature, HTST extrusion also involves high pressure in order to obtain an expanded product. The quality of the extrudate is influenced by the feed moisture content of the material and barrel temperature, so this study aims to assess the quality of the extrudate in the form of physical characteristics of the extrudate with the treatment of initial moisture content of the material and barrel temperature. The physical characteristics of the extrudate are expansion ratio, bulk density, particle density, water absorption index (WAI), water solubility index (WSI), color, hardness, and porosity. Corn *grits* and white sorghum flour were mixed with a composition of 10% white sorghum flour and 90% corn *grits* with variations in the initial moisture content of the ingredients of 12%, 14%, 16%, and 18% and barrel temperature (120-140°C). Data were analyzed using ANOVA and TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) methods. The mixture of the two materials was then extruded using a twin screw extruder. Extrudate moisture content, bulk density, particle density, hardness, WAI, and redness will increase as feed moisture increases. Increasing barrel temperature can increase expansion ratio and redness while extrudate moisture content, bulk density, particle density, hardness, WAI, WSI, lightness, and yellowness decrease.

Keywords: extrudate, barrel temperature, corn, feed moisture, sorghum