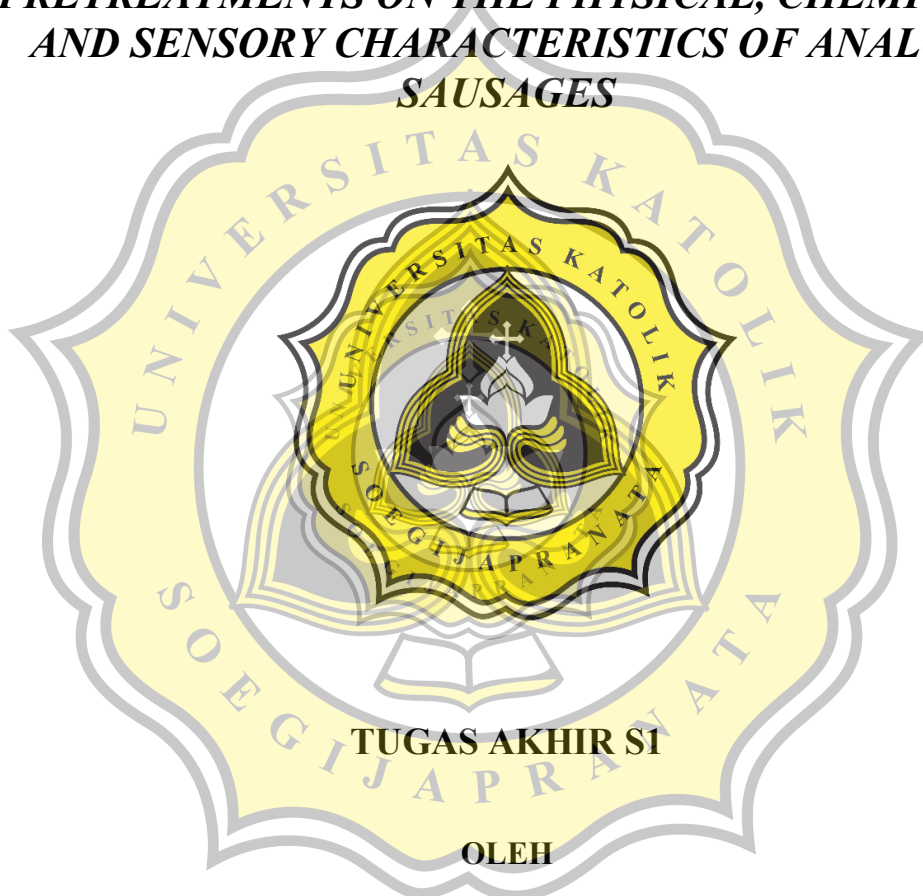


**PENGARUH VARIASI JENIS DAN RASIO
PENAMBAHAN JAMUR DENGAN PRAPERLAKUAN
YANG BERBEDA TERHADAP KARAKTERISTIK
FISIK, KIMIA, DAN SENSORI SOSIS ANALOG**

***THE EFFECT OF VARIATIONS IN TYPES AND RATIO
OF MUSHROOMS ADDITION WITH DIFFERENT
PRETREATMENTS ON THE PHYSICAL, CHEMICAL,
AND SENSORY CHARACTERISTICS OF ANALOG
SAUSAGES***



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RINGKASAN

Pengembangan sosis analog berbasis nabati sebagai alternatif berkelanjutan bertujuan untuk mengatasi isu lingkungan, konsumsi daging olahan berlebih, dan potensi krisis ketersediaan daging hewani di masa depan. Sosis analog ini menggunakan bahan baku jamur, yang dipilih secara khusus karena memiliki kemiripan tekstur berserat layaknya daging, memberikan cita rasa umami, memiliki profil nutrisi yang tinggi, serta proses pembudidayaannya yang sangat efisien dan ramah lingkungan. Penelitian ini membandingkan pemanfaatan tiga varietas jamur, yaitu jamur tiram, jamur kancing, dan jamur enoki. Tujuan utama penelitian ini adalah untuk mengetahui pengaruh variasi jenis jamur, persentase penambahan jamur ke dalam adonan (50%, 60%, dan 70%), serta metode praperlakuan termal (*hot water blanching*, perebusan, dan *steam blanching*) terhadap karakteristik fisik, proksimat, serta mutu sensori sosis analog. Penelitian kuantitatif ini dirancang menggunakan Rancangan Acak Lengkap (RAL) Faktorial 3x3. Berdasarkan evaluasi proksimat, kadar air sosis meningkat seiring dengan rasio jamur yang lebih tinggi. Metode praperlakuan dengan kontak langsung air (*hot water blanching* dan perebusan) menghasilkan kadar air lebih tinggi dibandingkan dengan *steam blanching*. Kadar abu semua formulasi melebihi batas SNI 3% akibat mineral alami jamur dan garam tambahan. Sebaliknya, kadar lemak jauh di bawah batas SNI 20% karena jamur rendah lemak. Kadar protein pada varian jamur kancing dan enoki memenuhi standar minimal SNI 8%. Kadar karbohidrat berada di atas batas SNI lama 8% (SNI terbaru tidak membatasi), dipengaruhi oleh rasio bahan. Paparan panas tidak mendegradasi protein secara ekstrem. Dari parameter warna, *hot water blanching* paling optimal mempertahankan kecerahan (L) karena pendinginan cepat meminimalkan reaksi pencoklatan. *Steam blanching* dan perebusan meningkatkan intensitas merah (a^*) dan kuning (b^*) akibat reaksi *Maillard*. Analisis tekstur menunjukkan bahwa rasio jamur masif (terutama 70%) menurunkan kekerasan (*hardness*), membuat sosis lebih lunak karena retensi air tinggi. *Steam blanching* terbukti paling efektif menghasilkan matriks sosis yang kompak, padat, dan kohesif karena tidak terjadi kontak air. Evaluasi sensori dengan uji hedonik oleh 30 panelis tidak terlatih menunjukkan tidak ada perbedaan nyata ($p > 0,05$) pada warna, rasa, tekstur, dan aroma. Ini menandakan tingkat penerimaan konsumen yang seragam untuk berbagai variasi sosis jamur. Kesimpulannya, rasio jamur dan metode praperlakuan sangat krusial terhadap kadar air, kadar abu, dan kualitas fisik tekstur sosis. Formulasi terbaik adalah kombinasi metode *steam blanching* dengan rasio penambahan jamur 50–60%, yang dinilai paling ideal untuk menjaga keseimbangan karakteristik fisik, proksimat, dan sensori mendekati sosis hewani konvensional.

SUMMARY

The development of plant-based sausage alternatives as a sustainable option aims to address environmental concerns, excessive consumption of processed meat, and the potential future shortage of animal-based meat. These plant-based sausages use mushrooms as the primary ingredient, specifically chosen for their fibrous texture resembling meat, their umami flavor, high nutritional profile, and highly efficient and environmentally friendly cultivation process. This study compares the use of three mushroom varieties: oyster mushrooms, button mushrooms, and enoki mushrooms. The primary objective of this study was to determine the effects of mushroom variety, the percentage of mushrooms added to the mixture (50%, 60%, and 70%), and thermal pretreatment methods (hot water blanching, boiling, and steam blanching) on the physicochemical characteristics, proximate analysis, and sensory quality of the analog sausages. This quantitative study was designed using a 3x3 factorial completely randomized design (CRD). Based on proximate analysis, the moisture content of the sausages increased with higher mushroom ratios. Pretreatment methods involving direct water contact (hot water blanching and boiling) resulted in higher moisture content compared to steam blanching. The ash content of all formulations exceeded the SNI limit of 3% due to the natural minerals in the mushrooms and added salt. Conversely, the fat content was well below the SNI limit of 20% because mushrooms are low in fat. The protein content in the button mushroom and enoki mushroom variants met the minimum SNI standard of 8%. Carbohydrate content was above the old SNI limit of 8% (the latest SNI does not set a limit), influenced by ingredient ratios. Heat exposure did not cause extreme protein degradation. Regarding color parameters, hot water blanching was most effective at maintaining lightness (L) because rapid cooling minimized browning reactions. Steam blanching and boiling increase the intensity of red (a) and yellow (b*) due to the Maillard reaction. Texture analysis shows that a high mushroom ratio (especially 70%) reduces hardness, making the sausage softer due to high water retention. Steam blanching proved most effective in producing a compact, dense, and cohesive sausage matrix due to the absence of water contact. Sensory evaluation via a hedonic test by 30 untrained panelists revealed no significant differences ($p > 0.05$) in color, taste, texture, and aroma. This indicates a consistent level of consumer acceptance for various mushroom sausage variations. In conclusion, the mushroom ratio and pretreatment method are crucial for the moisture content, ash content, and physical texture quality of the sausages. The optimal formulation is a combination of the steam blanching method with a mushroom addition ratio of 50–60%, which is considered the most ideal for maintaining a balance of physical, proximate, and sensory characteristics that closely resemble those of conventional animal-based sausages.*