

**PENGARUH PENAMBAHAN TEPUNG AMPAS TAHU  
TERHADAP KADAR SERAT KASAR, KUALITAS  
FISIK, DAN MIKROSTRUKTUR  
BAKSO DAGING SAPI**

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**INTISARI**

Penelitian ini bertujuan untuk mengetahui pengaruh penambahan tepung ampas tahu terhadap kadar serat kasar, kualitas fisik, dan mikrostruktur bakso daging sapi. Bahan yang digunakan dalam pembuatan bakso yaitu daging sapi, tepung tapioka, putih telur, STPP, garam, merica, bawang putih, air es, dan tepung ampas tahu. Perlakuan dalam penelitian ini adalah penambahan tepung ampas tahu sebanyak 0%, 2%, 4%, dan 6% dengan 5 kali pengulangan pada tiap perlakuan. Variabel uji yang diamati yaitu kadar serat kasar, kualitas fisik (pH, daya ikat air, tekstur), serta mikrostruktur. Seluruh variabel uji dianalisis menggunakan Rancangan Acak Lengkap (RAL) *One Way Anova* dan apabila terdapat perbedaan signifikan di antara reratanya dilanjutkan dengan uji *Duncan's New Multiple Range Test*. Hasil analisis statistik menunjukkan bahwa penambahan tepung ampas tahu pada bakso daging sapi berpengaruh nyata ( $P < 0,05$ ) menurunkan nilai daya ikat air 66,58-56,47%, *resilience* 38,70-29,62%, *cohesiveness* 0,79-0,63, dan *springiness* 88,38-81,50%, namun meningkatkan nilai *hardness* 14,08-21,98N, *gumminess* 433,05-685,36, *chewiness* 412,04-771,45, dan luas bagian emulsi di luar protein miofibril pada pengamatan mikrostruktur bakso 15,39-280,49 $\mu\text{m}^2$ . Penambahan tepung ampas tahu pada bakso daging sapi tidak berpengaruh nyata ( $P > 0,05$ ) terhadap kadar serat kasar dan pH, namun pada kadar serat kasar menunjukkan hasil yang cenderung meningkat 0,93-1,18%. Berdasarkan hasil penelitian dapat disimpulkan bahwa bakso dengan penambahan tepung ampas tahu 0% memberikan hasil kualitas fisik dan mikrostruktur terbaik.

**Kata kunci:** Bakso daging sapi, Tepung ampas tahu, Kadar serat kasar, Kualitas fisik, Mikrostruktur

## THE EFFECT OF TOFU WASTE FLOUR ADDITION ON CRUDE FIBER, PHYSICAL, AND MICROSTRUCTURAL QUALITIES OF BEEF MEATBALL

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### ABSTRACT

This study aims to determine the effect of tofu waste flour addition on crude fiber content, physical quality, and microstructure of beef meatballs. The ingredients used were beef, tapioca flour, egg white, STPP, salt, pepper, garlic, ice water, and tofu waste flour. The treatments in this study were the addition of 0%, 2%, 4%, and 6% tofu waste flour with 5 repetitions in each treatment. The variables observed were crude fiber content, physical quality (pH, water holding capacity, texture), and microstructure. All variables were analyzed by using a Completely Randomized Design (CRD) One Way Anova, and if there was a significant difference between the means, it was continued with Duncan's New Multiple Range Test. The results of statistical analysis showed that the addition of tofu waste flour to beef meatballs had a significant effect ( $P < 0.05$ ) on reducing the values of water binding capacity 66.58-56.47%, resilience 38.70-29.62%, cohesiveness 0.79-0.63, and springiness 88.38-81.50%, but increased the values of hardness 14.08-21.98N, gumminess 433.05-685.36, chewiness 412.04-771.45, and the area of the emulsion part outside the protein myofibril in the observation of meatball microstructure 15.39-280.49 $\mu\text{m}^2$ . The addition of tofu waste flour to beef meatballs had no significant effect ( $P > 0.05$ ) on crude fiber content and pH but the crude fiber content showed results that tended to increase at 0.93-1.18%. Based on the results of the study, it can be concluded that meatballs with 0% tofu waste flour addition gave the best physical quality and microstructure results.

**Key Words:** Beef meatball, Tofu waste flour, Crude fiber, Physical quality, Microstructure