

PENGARUH *WHEY POWDER* DAN LEVEL LEMAK TERHADAP KUALITAS FISIK DAN MIKROSTRUKTUR BAKSO DAGING SAPI

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh *whey powder* dan lemak sapi terhadap kualitas fisik dan mikrostruktur bakso daging sapi. Materi yang digunakan yaitu daging sapi, lemak sapi, *whey powder*, tepung tapioka, es batu, garam, merica, bawang putih. Bakso dibuat dengan penambahan lemak sapi pada level 5, 10, dan 20% serta penambahan *whey powder* pada level 0, 2, dan 4%. Variabel yang diuji pH, daya ikat air, keempukan, dan mikrostruktur. Data dianalisis dengan analisis variansi pola faktorial dilanjutkan dengan *Duncans New Multiple Ranges Test* (DMRT). Hasil penelitian menunjukkan bahwa bakso daging sapi dengan level lemak dan *whey powder* mempengaruhi secara nyata ($P \leq 0,05$) nilai pH, keempukan, dan DIA. Interaksi level lemak dan *whey powder* yang berbeda berpengaruh secara nyata terhadap nilai pH dan DIA, namun tidak mempengaruhi keempukan. Nilai pH tertinggi *whey powder* 0% yaitu $5,44 \pm 0,52$, terendah 4% yaitu $5,00 \pm 0,00$. Nilai pH terendah lemak 5% yaitu $5,00 \pm 0,00$, tertinggi 10% yaitu $5,55 \pm 0,52$. Keempukan tertinggi *whey powder* 0% sebesar $56,44 \pm 7,93$ mm/g/detik, terendah 4% sebesar $52,22 \pm 4,68$ mm/g/detik. Keempukan terendah lemak 5% yaitu $51,33 \pm 7,15$ mm/g/detik, tertinggi 10% sebesar $58,00 \pm 4,52$ mm/g/detik. Daya ikat air tertinggi *whey powder* 0% yaitu $43,00 \pm 5,59\%$, terendah 4% yaitu $39,77 \pm 7,74\%$. Daya ikat air tertinggi kadar lemak 20% yaitu $45,11 \pm 3,40\%$, terendah 5% sebesar $37,11 \pm 6,64\%$. Berdasarkan hasil penelitian, level lemak dan pemberian *whey powder* dapat meningkatkan kualitas fisik bakso daging sapi secara signifikan. Hal ini dapat diketahui dari hasil yang menunjukkan bahwa mikrostruktur bakso daging sapi homogen, tidak beraturan, dan kasar. Mikrostruktur terbaik pada penelitian bakso daging sapi ini terletak pada pemberian level lemak 10% dan *whey powder* 2%.

Kata kunci: Bakso daging sapi, *Whey powder*, Lemak sapi, Sifat fisik.

THE EFFECT OF WHEY POWDER AND FAT LEVEL ON PHYSICAL QUALITY AND MICROSTRUCTURE OF MEATBALL

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ABSTRACT

This study aimed to determine the effect of whey powder and fat level on the physical quality and microstructure of meatballs. The materials used beef, fat, whey powder, tapioca flour, ice cubes, salt, pepper, and garlic. Meatballs were made by adding beef fat at levels 5, 10, and 20% and adding whey powder at levels 0, 2, and 4%. The variables tested were pH, water holding capacity, tenderness, and microstructure. Data were analyzed by factorial analysis of variance followed by Duncan's New Multiple Ranges Test (DMRT). The results showed that meatballs with fat and whey powder levels significantly affected ($P \leq 0.05$) on pH, tenderness, and WHC values. The interaction of fat and whey powder addition significantly affected on the pH and WHC values, but did not affect on the tenderness. The highest pH value was meatball without whey powder addition i.e. 5.44 ± 0.52 and the lowest pH value was meatball with 4% whey powder addition, which was 5.00 ± 0.00 . The lowest pH of meatball with 5% fat was 5.00 ± 0.00 , the highest pH of meatball with 10% fat was 5.55 ± 0.52 . The highest tenderness of meatball with whey powder was 56.44 ± 7.93 mm/g/second and the lowest tenderness of meatball with whey powder 4% was 52.22 ± 4.68 mm/g/second. The lowest tenderness was meatball with 5% fat, which was 51.33 ± 7.15 mm/g/second, and the highest tenderness of meatball with 10% fat was 58.00 ± 4.52 mm/g/second. The highest water holding capacity of meatball without whey powder is $43.00 \pm 5.59\%$ and the lowest water holding capacity of meatball with 4% was $39.77 \pm 7.74\%$. The highest water holding capacity of meatball with 20% fat was $45.11 \pm 3.40\%$ and the lowest water holding capacity of meatball with 5% fat was $37.11 \pm 6.64\%$. Based on the results, the level of fat and whey powder could significantly improve the physical quality of meatballs. It could be seen that the microstructure of beef meatballs was homogeneous, irregular and coarse. The best microstructure of meatballs was meatballs with the addition of 10% fat and 2% whey powder.

Keywords: Beef meatballs, Whey powder, Beef fat, and Physical properties