

PENGARUH SUBSTITUSI TEPUNG TAPIOKA DENGAN TEPUNG KETAN HITAM (*Oriza sativa L var. glutinosa*) TERHADAP AKTIVITAS ANTIOKSIDAN, KUALITAS FISIK, DAN MIKROSTRUKTUR BAKSO AYAM BROILER

Azizah Meysya Erbyandhini
20/459671/PT/08497

INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh substitusi tepung tapioka dengan tepung ketan hitam terhadap aktivitas antioksidan, kualitas fisik, dan mikrostruktur bakso ayam broiler. Materi yang digunakan adalah daging ayam broiler, tepung tapioka, tepung ketan hitam, STPP, garam, lada, ketumbar, bawang putih, dan es. Adonan bakso ayam dibagi menjadi empat perlakuan dengan lima replikasi dengan substitusi tepung ketan hitam 0, 25, 50, dan 75%. Parameter yang diuji yaitu aktivitas antioksidan, kualitas fisik (pH, daya ikat air, *firmness*), dan mikrostruktur. Data yang diperoleh dianalisis dengan menggunakan analisis variansi pola searah dan dilanjutkan dengan *Duncan's New Multiple Ranges Test* (DMRT). Mikrostruktur bakso dilakukan dengan mikroskop kemudian dianalisis dengan analisis deskriptif. Hasil analisis statistik menunjukkan bahwa substitusi tepung tapioka dengan tepung ketan hitam berpengaruh sangat nyata ($P < 0,01$) terhadap keempukan (*firmness*) dan aktivitas antioksidan. Akan tetapi, tidak berpengaruh terhadap nilai pH dan daya ikat air (DIA). Nilai pH yaitu 6,39; 6,37; 6,38; dan 6,41. Nilai daya ikat air (DIA) yaitu 55,73; 57,35; 57,83; dan 57,93%. Nilai keempukan (*firmness*) yaitu 1,87; 1,57; 1,43; dan 1,31 kgf. Hasil aktivitas antioksidan yaitu 39,38; 56,48; 62,16; dan 65,31%. Hasil mikrostruktur menunjukkan bahwa peningkatan level substitusi tepung ketan hitam membuat struktur bakso semakin kompak dan padat. Berdasarkan penelitian ini, dapat disimpulkan bahwa substitusi tepung tapioka dengan tepung ketan hitam dalam bakso ayam broiler tidak mempengaruhi nilai pH dan daya ikat air tetapi menurunkan nilai keempukan (*firmness*). Peningkatan kadar tepung ketan hitam dapat meningkatkan aktivitas antioksidan serta membuat mikrostruktur bakso semakin homogen. Perlakuan substitusi terbaik adalah 25% tepung ketan hitam.

Kata kunci : Bakso ayam broiler, Substitusi, Tepung ketan hitam, Aktivitas antioksidan, Kualitas fisik, Mikrostruktur.

THE EFFECT OF SUBSTITUTING TAPIOCA FLOUR WITH BLACK GLUTINOUS RICE FLOUR (*Oryza sativa L var. glutinosa*) ON ANTIOXIDANT ACTIVITY, PHYSICAL QUALITY, AND MICROSTRUCTURE OF BROILER CHICKEN MEATBALLS

Azizah Meysya Erbyandhini
20/459671/PT/08497

ABSTRACT

This research aimed to determine the effect of substituting tapioca flour with black glutinous rice flour (*Oryza sativa L var. glutinosa*) on antioxidant activity, physical quality, and microstructure of broiler chicken meatballs. The materials used include broiler chicken meat, tapioca flour, black glutinous rice flour, STPP, salt, pepper, coriander, garlic, and ice. The chicken meatball dough was divided into four treatments with five replications, with substitutions of black glutinous rice flour at 0%, 25%, 50%, and 75%. Parameters tested were antioxidant activity, physical quality (pH, water-holding capacity, firmness), and microstructure. The data obtained were analyzed using one-way analysis of variance followed by Duncan's New Multiple Ranges Test (DMRT). The microstructure of the meatballs was conducted using a microscope and then analyzed descriptively. The statistical analysis results indicate that substituting tapioca flour with black glutinous rice flour had a highly significant effect ($P < 0.01$) on firmness and antioxidant activity. However, it did not affect the pH value and water-holding capacity (WHC). The pH values were 6,39; 6,37; 6,38; and 6,41. The water-holding capacity values were 55,73; 57,35; 57,83; and 57,93%. The firmness values were 1,87; 1,57; 1,43; and 1,31 kgf. The antioxidant activity results sequentially were 39,38; 56,48; 62,16; and 65,31%. Microstructure results indicated that an increase in the level of black glutinous rice flour substitution made the meatball structure more compact and dense. Based on this research, it can be concluded that substituting tapioca flour with black glutinous rice flour in broiler chicken meatballs does not affect the pH value and water-holding capacity but decreases the firmness value. Increasing the level of black glutinous rice flour can enhance antioxidant activity and make the meatball microstructure more homogeneous. The best substitution treatment is 25% black glutinous flour.

Keywords: Broiler chicken meatballs, Substitution, Black glutinous rice flour, Physical quality, Antioxidant activity, Microstructure.