IDENTIFIKASI *SINGLE NUCLEOTIDE POLYMORPHISM* GEN FASN SERTA ASOSIASINYA TERHADAP BOBOT KARKAS, KADAR LEMAK, DAN KEEMPUKAN DAGING SAPI PERANAKAN ONGOLE

ABSTRAK

Rahmatika Choiria
16/407589/PPT/00970

Penelitian ini bertujuan untuk mengidentifikasi *Single Nucleotide Polymorphism* (SNP) gen FASN dan menentukan asosiasinya berdasarkan bobot karkas, sifat kimiawi, dan sifat fisik daging Sapi PO dan Sapi PO Kebumen. Penelitian ini telah dilaksanakan pada bulan Januari hingga Desember 2018. Penelitian dilakukan di RPH Giwangan (sapi PO) dan RPH Kebumen (sapi PO Kebumen), serta Laboratorium Genetika dan Pemuliaan Ternak dan Laboratorium Ilmu dan Teknologi Daging Fakultas Peternakan Universitas Gadjah Mada. Sebanyak 200 gram sampel daging dari masing-masing 30 ekor sapi PO dan sapi PO Kebumen digunakan dalam penelitian ini. Sampel tersebut dianalisis molekuler menggunakan metode PCR, sekuensing untuk identifikasi SNP dan genotip ternak. Sedangkan analisis kualitas daging menggunakan NIR *Spectroscopy* untuk analisis sifat kimiawi, *Warner-Bratzler shear force* (uji keempukan), pH meter (uji pH) dilakukan untuk sifat fisik. Data sifat kimia dan fisik, serta asosiasi gen FASN dan kualitas daging dianalisis menggunakan *independent sample t-test* untuk performans kedua bangsa. Hasil penelitian menunjukkan bahwa faktor bangsa berpengaruh signifikan terhadap bobot karkas ($P<0,05$) dan memiliki kecenderungan signifikan terhadap keempukan ($P=0,69$). Terdapat 6 SNP pada target gen FASN yaitu SNP g.16869C>T, SNP g.16876A>T, SNP g.16896G>A, SNP g.17046G>A, SNP g.17096C>T, dan SNP g.17104T>C. SNP g.16876A>T memiliki kecenderungan signifikan terhadap keempukan daging sapi PO Kebumen ($P=0,07$). Untuk SNP g.16986G>A, SNP g.17096C>T, SNP g.17104T>C masing-masing berpengaruh signifikan ($P<0,05$) terhadap kadar protein, pH, dan daya ikat air daging pada kedua bangsa. Kesimpulan dari penelitian ini adalah 3 SNP dari 6 SNP yang terdeteksi dapat direkomendasikan untuk alat seleksi kualitas daging meliputi kadar protein, pH, dan daya ikat air.

Kata kunci: gen FASN, kualitas daging, *Single Nucleotide Polymorphism* (SNP), Sapi Peranakan Ongole

IDENTIFICATION OF SINGLE NUCLEOTIDE POLYMORPHISM FASN GENE AND ITS ASSOCIATION ON CARCASS WEIGHT, FAT LEVEL, AND MEAT TENDERNESS OF ONGOLE GRADE CATTLE

ABSTRACT

Rahmatika Choiria
16/407589/PPT/00970

The aim of this study was to identify Single Nucleotide Polymorphism of FASN gene and determine the association with carcass weight, chemical and physical properties of Ongole Grade and Kebumen Ongole Grade cattle. This study was conducted over a period of 12 months, from January until December 2018. This study was conducted in Giwangan Slaughter House (Ongole Grade cattle) and Kebumen Slaughter House (Kebumen Ongole Grade cattle), Laboratory of Animal Breeding and Genetics, and Laboratory of Meat Science and Technology. The 200 g of meat samples each 30 head of Ongole Grade and Kebumen Ongole Grade cattle were used in this study. The samples were analyzed molecularly using PCR method and sequencing for SNP and genotype identification. The meat quality was analyzed using NIR Spectroscopy for chemistry characteristics analysis, Warner-Bratzler shear force for tenderness test, and pH meter for pH test. The chemical and physical properties data, and the association of FASN gene with meat quality was analyze using independent sample t-test. The result of this study found the breed of cattle has a significant effect on carcass weight ($P<0,05$) and has tendency effect to meat tenderness ($P=0,69$). This study also indicated 6 SNPs in FASN gene that were SNP g.16869C>T, SNP g.16876A>T, SNP g.16986G>A, SNP g.17046G>A, SNP g.17096C>T, dan SNP g.17104T>C. The SNP g.16876A>T has a significant tendency toward meat tenderness of Kebumen Ongole Grade cattle ($P=0,07$). For SNP g.16986G>A, SNP g.17096C>T, and SNP g.17104T>C has a significant effect ($P<0,05$) on protein content, pH, and water holding capacity on both of Ongole Grade and Kebumen Ongole Cattle respectively. In conclusion, three SNPs out of six SNPs detected can be recommended for meat quality selection tools including protein content, pH, and water holding capacity.

Keywords: FASN gene, meat quality, Single Nucleotide Polymorphism (SNP), Ongole Grade cattle