

An association between the C>T single nucleotide polymorphism within intron IV of osteopontin encoding gene (SPP1) and body weight of growing Polish Holstein-Friesian cattle

Chandra S. Pareek^{1**}, Urszula Czarnik², Mariusz Pierzcha^{3a3}, Lech Zwierzchowski³

¹ Laboratory of Functional Genomics, Faculty of Biology and Earth Sciences, Institute of General and Molecular Biology, Nicolaus Copernicus University, Gagarina 9, 87-100 Toruń, Poland ² Department of Animal Genetics, University of Warmia and Mazury, Oczapowskiego 5, 10-718, Olsztyn, Poland ³ Polish Academy of Sciences Institute of Genetics and Animal Breeding, Jastrzębiec, 05-552 Włka Kosowska, Poland

Abstract :

A relation was studied between body weight measured at the age of 3, 6 and 12 months in Polish Holstein-Friesian (HF) heifers (n=111) and young bulls (n=87) and C/T polymorphism within intron IV of bovine osteopontin encoding gene (SPP1). Three half-sib (HS) families were considered, each sired by heterozygous C/T sire. Significant association was found of SPP1 C>T SNP with body weight in all the analysed HS progeny groups of young heifers and bulls. Within young bulls the differences were identified (P.0.05) in body weight between the SPP1 genotypes (8514C/C, 8514C/T, 8514T/T) in month 3, 6 and 12 of age. Within heifers, however, the differences (P.0.05) were found in the progeny groups aged 6 and 12 months. Moreover, when data from bulls and heifers were pooled (n=198) the highly significant effect (P.0.01) of SPP1 genotype on body weight was observed at the age of 6 and 12 months. An effect was revealed of allele T as a favourable allele related to higher body weight in both young bulls and heifers. The presented results suggest that SPP1 C>T SNP marker might be considered as candidate gene for intensive growth in Polish HF cattle and could further be investigated in large co-segregating HS families or other experimental designs.

Key Word :

body weight gain / cattle / growth / nucleotide polymorphism / osteopontin

Volume 26, Number 4, - 2008