



POLYMORPHISM IN MYOD1 GENE INCREASES GROWTH TRAITS OF SANTA INES LAMBS

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This study aimed to identify associations between SNP in MyoD1 gene and growth traits in 58 Santa Ines lambs. All lambs were raised in the Pedro Arle Experimental Farm of Embrapa Coastal Tablelands, between 2010 and 2012, in the municipality of Frei Paulo, Sergipe State, latitude 10°32'58" south and longitude 37°32'04" west, altitude 272 meters with semi-arid climate. Sheep and lambs were raised on pasture during the day and confined the night when they received corn silage the basis of 1.5% of body weight, besides water and mineralization ad libitum. The lambs were measured for body weight at birth (PN) and 30 (P30), 60 (P60), 90 (P90), 112 (weaning - PD) and 240 (P240) days of age. The weight daily gain pre-weaning (GPND) and post-weaning (GPD240) were estimated too. A segment of 2,428 bp of MyoD1 gene was amplified in all animals, using the Forward (CAG CTC ACC AGT GCT TTG CT) and Reverse (CCT GCC TGC CGT ATA AAC AT) primers. The marker used in this study is located at position 34,370,841 of the sheep genome reference into the first exon, and it is missense mutation G/T that promotes the modification of the threonine by asparagine amino acid. Analysis of variance was used for evaluated the association between SNP and traits, using significance level of 5%. This SNP had significant effects on P60 (P=0.0210), P90 (P=0.0027), PD (P<0.0001) and GPND (P<0.0001). The difference between the averages of the homozygous genotypes for P60, P90, PD and GPND were 4.49 kg, 6.63 kg and 9.29 kg, 89.49 g/day, respectively. The allelic replacement effects of this SNP were 0.9698 kg, 1.4554 kg, 2.2306 kg and 23.6630 g / day for P60, P90, PD and GPND respectively. The percentage of residual variance explained by this marker were 2.56%, 3.52%, 6.60% and 11.67% for P60, P90, PD and GPND respectively. The G allele improve higher values for the traits, but this allele has frequency (15.38%) much smaller than the T allele (84.62%) in this population and most of G alleles are in heterozygous animals (GT). Therefore, this marker has great potential for use in the selection of Santa Ines sheep to increase body weight and daily gain. So far there is no association reports of MyOD1 gene with economic traits in sheep, as well as identifying molecular markers in this gene for Santa Ines.

Key-words: body weight, genome, myogenesis, SNP