**SINGLE NUCLEOTIDE POLYMORPHISMS (SNP) FREQUENCIES IN BOVINE GENES ASSOCIATED WITH MARBLING DIFFER BETWEEN **

**BOS TAURUS AND BOS INDICUS BREEDS**

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**Introduction:** Brangus is a composite breed that was developed to combine desirable traits from Angus (B. taurus) with the rusticity from Brahman (B. indicus). While the theoretical composition of the different varieties is regulated by the Breeders Association, it is not known how selection affects the actual allele frequencies of genes associated with traits of economic importance.

**Objective:** Determine allele and genotype frequencies of SNP of growth and lipid metabolism related genes in Brangus steers and crosses among the Angus, Limousin and Hereford breeds and to evaluate to which extent these SNP were associated with meat quality traits.

**Methods:** The study involved 246 Brangus and 177 Bos taurus steers fattened in grazing beef production systems of Argentina. Intramuscular fat (IMF) was estimated from dried ground L. dorsi muscle samples. Genomic DNA was extracted from blood samples and submitted for SNP genotyping. Allele, genotype, and haplotype frequencies were estimated for a panel of 51 SNP in the following genes: GHR; IGF1; IGFBP6; PMCH; SOCS2; STAT6; INSIG1; INSIG2; PS2; SCAP; SCD; SCD5; SREBP1 and SRPR. The associations of genotype of individual SNP with marbling in Brangus steers was evaluated by analysis of variance.

**Results:** Polymorphism GHR-51(A/G), GHR-34(A/G), STAT6-44(C/T) and SRPR-41(C/G) were significantly associated with marbling (p< 0.013, 0.023, 0.010 and 0.035, respectively), whereas SNP INSIG1-53(C/T), SCAP-32(C/T), SCAP-384(C/T) and SCD5-134(C/T) showed a trend toward significance (p< 0.10). For GHR-51, allele A, that was associated with a higher content of intramuscular fat (2.99% in AA vs 2.44% in GG), had a lower frequency in Brangus compared to other European breeds, including Angus. Moreover, alleles A in GHR-34 and T in STAT6-44 that decrease IMF in Brangus steers, were not found in European steers, suggesting that they originated in Brahman. SRPR-41 showed a similar pattern, since the allele frequency of the favorable allele for IMF was 0.25 in Brangus and 0.75 European breeds.

**Conclusion:** Comparison of the actual distribution of allele frequencies of genes associated with economically important traits could be of help in the selection process that leads to the creation of a composite breed. This is especially important for those loci that are not directly related to the most common traits involved in the selection of seedstock, such as those related to the final quality of meat.

**Keywords:** Brangus, IMF, GHR, SRPR, STAT6