

Polymorphisms in the regulatory regions of genes regulating lipid metabolism in the mammary gland in Guzerat breed (*Bos indicus*)

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Milk production is completely dependent on lipids metabolism. A better comprehension of the regulation of gene expression is fundamental, once lipid metabolism genes are the natural functional candidates for major genes impacting on milk production and composition. Indicine breeds, such as Guzerá, are fundamental for milk production in the tropics. However, most of the studies ascertaining genetic variants were undertaken in taurine breeds. Peroxisome proliferator activated receptor gamma (PPARG), member of a family of nuclear receptors, promotes gene regulation by binding the DNA sequence. This mechanism is regulated by steroids, thyroid hormones, vitamins, lipids, and xenobiotics. PPARG acts in the regulation of metabolic process related to lipid syntheses, important on directly regulation of at least twelve genes and three others indirectly. Among them, SREBF1 (sterol regulatory element binding transcription factor 1), that regulates transcription of target genes required for the synthesis of cholesterol, fatty acids, triglycerides and phospholipids in the mammary bovine gland. Therefore, studies on the regulatory regions of these genes, 5' and 3' UTRs, are fundamental. Until now, only one SNP on PPARG was described in bovines. Here, we describe the search for polymorphisms through sequencing of 3' UTR of PPARG and 5' UTR of SREBF1. For sequencing, we selected Guzerá bulls with low kinship coefficients for PPARG (8) and SREBF1 gene (16 animals). Sequencing was developed in MegaBACE® platform and sequence edition was made with Phred/Phrap/Consed package. Alignment and SNP/INDELs detection of were made using MEGA 5 and haplotypes, as well as linkage phase were estimated with the PHASE 2.1.1. Haplotypes were used in phylogenetic analyses with Neighbor Joining, using *Sus scrofa* (GenBank: 397671) as out group. Six haplotypes were found and three SNPs: G → A (allele frequency of A: 0.31), T → A (allele frequency of A: 0.69) and A → C (allele frequency of C: 0.40). Sequences were aligned to *Bos taurus* reference sequence (Genbank ID: 281993) leading to the detection of a 47pb insertion. Evolutionary conservation was ascertained with multialignment including sequences of *Bos grunniens* (gi: 262213549), *Bus buballus* (gi: 311976569), *Homo sapiens* (gi: 325495542), *Sus scrofa* (gi: 371914159). The insertion region was conserved in all sequences except on the taurine sequence. For SERBF1, no variations were found in the 5'UTR. All the DNA variations described here are new. They are the first described for Guzerá in PPRAG gene. As next, these genetic variations will be used in association studies of PPRAG and milk production and composition parameters in Guzerat. Supported by: CNPq, CAPES, FAPEMIG, PRONEX.

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