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Polymorphisms of STAT5A and DGAT1 Genes and Their Associations with Milk Trait in Egyptian Goats

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Abstract : The objectives of this study were to identify polymorphisms in the STAT5A using Restriction Fragment Length Polymorphism and DGAT1 using Single-Strand Conformation Polymorphism genes among three Egyptian goat breeds (Barki, Zaraibi, and Damascus) as well as investigate the effect of their genotypes on milk composition traits of Zaraibi goats. One hundred and fifty blood samples were collected for DNA extraction, 60 from Zaraibi, 40 from Damascus and 50 from Barki breeds. Fat, protein and lactose percentages were determined in Zaraibi goat milk using an automatic milk analyzer. Two genotypes, CC and CT (for STAT5A) and C-C- and C-C+ (for DGAT1), were identified in the three Egyptian goat breeds with different frequencies. The associations between these genotypes and milk fat, protein and lactose were determined in Zaraibi breed. The results showed that the STAT5A genotypes had significant effects on milk yield, protein, fat and lactose with the superiority of CT genotype over CC. Regarding DGAT1 polymorphism, the result showed the only association between it with milk fat where the animals with C-C+ genotype had greater milk fat than animals possess C-C- genotype. The association of combined genotypes with milk trait declared that the does with heterozygous genotypes for both genes are preferred than does with homozygous genotypes where the animals with CTC-C+ have more milk yield, fat and protein than those with CCC-C- genotype. In conclusion, the result showed that C/T and C-/C+ SNPs of STAT5A and DGAT1 genes respectively may be useful markers for assisted selection programs to improve goat milk composition

Keywords : DGAT1, genetic polymorphism, milk trait, STAT5A
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