

# Genetic Polymorphism of Kappa-Casein Gene in Senegalese Local Cattle Breeds

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## 1 ABSTRACT

In Senegal, the dairy production improvement of the local cattle breeds, is one of the most political and economic issues challenged by public authorities and stakeholders. To address such challenges, the study of genes related to milk production is essential to accelerate the genetic improvement of these cattle breeds. Among these lactoprotein genes, kappa-casein (*CSN3*) is one of the most targeted because of its effects on milk composition and cheese making properties. The objective of this study was to identify the kappa-casein (*CSN3*) genetic variants and to estimate its polymorphism in the Senegalese local cattle breeds. The animal sampling consisted of 48 cattle from the four breeds namely Gobra zebu, Maure zebu, Djakore and N'Dama taurine. The characterization of the *CSN3* gene exon IV genetic polymorphism was performed using PCR-Sequencing method. The identification revealed four genetic variants *A*, *B*, *A'* and *H*, from which six haplotypes were resulted: *AA*, *AA'*, *AH*, *A'H*, *BB* and *BH*. The highest genetic variability of the *CSN3* gene was observed in Maure zebu and Djakore with four haplotypes for each breed. Genetic variants *CSN3\*A* and *CSN3\*B* associated with high milk protein content, cheese making properties, and milk coagulation properties are the most represented in the Senegalese local cattle breeds. These preliminary results should encourage the inclusion of these genetic variants among the selection criteria when designing breeding programs for improving dairy production in Senegal.