

GENETIC DIVERSITY OF EXON 4 OF KAPPA CASEIN (k-CSN3) GENE IN THAMANKADUWA WHITE CATTLE COMPARED WITH JERSEY CROSS AND FRIESIAN BREEDS

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White cattle or Thamankaduwa breed is a unique type of local cattle that has been well adapted to local environment. Only few studies have been carried out to characterize White cattle and thus little information is available on their genetic diversity, especially considering the polymorphism of kappa-casein gene (k-CSN3) that plays an important role in milk chemistry. The objective of this study was to analyze the genetic diversity of White cattle by using exon 4 of k-CSN3 and compare the same with Jersey cross and Friesian animals. Blood samples from eight White cattle, six Jerseys cross and seven Friesians were collected. Exon 4 of k-CSN3 was amplified by PCR mixture with forward (5'-TTCACCTCTGCTTCTGCTGCT-3') and reverse (5'-ATTAGCCCATTTTCGCCTTCT-3') primers. PCR amplicons were sequenced in both directions, edited and aligned to corresponding gene sequence of *Bos taurus* which is available in

GenBank®. Codon code, Phase v2.1 and Arliquin v3.5.2.2 software programmes were used to analyze the findings. Genetic analysis indicated presence of six types of novel haplotypes and six novel single nucleotide polymorphic sites (SNPs) in White cattle. Among them all six haplotypes and one SNP were unique for White cattle. A significantly high genetic diversity was recorded in White cattle (0.080±0.07) when compared with Friesian (0.49±0.15) and Jersey crossbred (0.68±0.09). In conclusion, White cattle showed the highest genetic diversity compared with other two exotic breeds, considering the exon 4 of k-CSN3. This study gives preliminary evidences for further studies aimed at further genetic improvements of indigenous cattle in Sri Lanka.

Keywords: Genetic diversity, K-casein, White cattle