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Analysis of polymorphisms in milk proteins from cloned and sexually reproduced goats

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ABSTRACT. This study evaluates the relationship between the genotype and milk protein components in goats. Milk samples were collected from cloned goats and normal white goats during different postpartum (or abortion) phases. Two cloned goats, originated from the same somatic line of goat mammary gland epithelial cells, and three sexually reproduced normal white goats with no genetic relationships were used as the control. The goats were phylogenetically analyzed by polymerase chain reaction-restriction fragment length polymorphism. The milk protein components were identified by sodium dodecyl sulfate polyacrylamide gel electrophoresis. The results indicated that despite the genetic fingerprints being identical, the milk protein composition differed between the two cloned goats. The casein content of cloned goat C-50 was significantly higher than that of cloned goat C-4. Conversely, although the genetic fingerprints of the normal white goats N-1, N-2, and N-3 were not identical, the milk protein profiles did not differ significantly in their milk samples (obtained on postpartum day 15, 20, 25, 30, and 150). These results indicated an association between milk protein phenotypes and genetic polymorphisms, epigenetic regulation, and/or non-chromosomal factors. This study extends

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the knowledge of goat milk protein polymorphisms, and provides new strategies for the breeding of high milk-yielding goats.

Key words: Goat; Genotype; Milk protein; Polymorphism; SDS-PAGE

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