

ABSTRACT

ASSOFA MARIA, Identification Polymorphism of Gene Pituitary Specific Positive Transcription Factor-1 (PIT-1) in Friesian Holstein and Sumbawa Cattle. Supervised by Dr. Yulia Irnidayanti, M.Si and Ari Sulisty Wulandari, M. Agr.

Friesian Holstein (FH) cows are the largest milk producers of other dairy cattle, but the milk production of these cattle in Indonesia is not maximized due to the high temperature factor. There is another breed of local Indonesian cattle, namely the Sumbawa cattle. These cattle produce a volume of milk less than the volume of FH cattle's milk, but have a higher quality of milk fat. Pituitary specific Transcription Factor-1 (PIT-1) is a gene that affects milk production which acts as a specific transcription factor for the pituitary gland, regulating pituitary development, to produce the hormone prolactin. The purpose of this study was to determine the diversity and differences in the diversity of the PIT-1 gene in FH cattle and Sumbawa cattle. The research was carried out in January-August 2020 at the Animal Cell Reproduction, Breeding and Culture Laboratory (RPKSH), Institute of Sciences (LIPI), Biotechnology Research Center, Indonesian Institute of Sciences (LIPI), Cibinong. The method used is descriptive qualitative. Using 30 DNA samples of FH and 72 DNA of Sumbawa cattle. The results of this study indicated that the PIT-1 gene in FH cattle had the AA genotype frequency (0.1); AB (0.625); BB (0.275) and the frequency of allele A (0.4125), allele B (0.5875). The PIT-1 gene in Sumbawa cattle has a genotype frequency of AB (1.00) and an allele frequency of A (0.5), allele B (0.5). It can be concluded that the PIT-1 gene in FH cattle is polymorphic, so it has the potential as a genetic candidate for further selection. The PIT-1 gene in Sumbawa cattle is monomorphic, so it cannot be used further in selection.

Key words: FH cattle, Sumbawa cattle, PIT-1 gene, polymorphism