

[L/G1] PIT-1 POLYMORPHISMS AND MILK PRODUCTION PARAMETERS IN ITALIAN-FRIESIAN BULLS. I. Parmentier¹, N. Gengler², F. Mortiaux¹, S. Massart¹, C. Bertozzi¹, D. Portetelle¹, R. Renaville¹. ¹*Department of Applied Biochemistry and Biology,* ²*Department of Agronomy, Economy and Development, University Faculty of Agricultural Sciences, B-5030 Gembloux, Belgium.*

Pit-1 is a pituitary-specific transcription factor responsible for hormone expression in mammals. Mutations in the gene encoding Pit-1 have been found in growth hormone disorder in mice and humans. A mutation situated at the exon 6 level of the gene Pit-1, has been observed in our laboratory by PCR amplification and digestion of the PCR product with HinfI. Among the three patterns observed (AA, AB and BB), the AB pattern was found significantly superior to the BB pattern for milk and protein yield ($P < 0,05$) and significantly inferior for fat percentage ($P < 0,01$) in 91 Holstein-Friesian bulls (Renaville et al., 1997). Findings for the AA pattern were based on only 2,2% of the animals and were therefore considered as preliminary results.

The aim of this study was to search eventual association between a second mutation, found at the exon 2 level with a SSCP (Single Strand Chain Polymorphism) method, and milk traits of the 91 Holstein-Friesian bulls used in the previous study. We have also determined the eventual correlation between the combinations issue from the association of the two mutations (situated at the exon 2 and 6 level) and the milk traits. A fixed linear model was fitted on the Daughter Yield Deviation (DYDs) for milk, fat and protein yield. Observations were weighted according to the reliability for DYDs and the model contained Pit-1 pattern fixed effect.

The SSCP method shows two patterns called C and D. The frequency of these patterns is 59,5% for C and 40,5% for D. No significant association was obtained between these patterns and the milk traits. On the other hand, the association of the AB pattern with the C pattern is significantly superior for the milk and protein yields than the other possible combinations (AB+D, BB+C, BB+D). We have also observed that the effect of the combination of the AB and C patterns on milk and protein yields is superior to the effect of the AB pattern alone ($381,8 \pm 171,5$ kg milk and $12,7 \pm 5,6$ kg protein against $120,3 \pm 49,7$ kg milk and $4,4 \pm 1,6$ kg protein respectively). In conclusion, this study show possible evidence of an interesting relationship between Pit-1 the association of the two pit-1 polymorphisms and milk traits in dairy cattle.

Reference: Renaville et al., 1997, *J. Dairy Sci*, **80**.

Key words: Pit-1, Polymorphisms, Mutations, Milk traits.