The Study of Prolactin RsaI Polymorphism in Romanian Grey Steppe Cattle Breed

Crina T. CARSAI, Adrian V. BĂLTEANU, Augustin VLAIC, Olivier CHAKIROU

University of Agricultural Sciences and Veterinary Medicine, Faculty of Animal Science and Biotechnologies, Regional Laboratory of Farm Animals Genotyping, 3-5 Mănăștur Street, 400372 Cluj-Napoca, Romania; lzga.usamvcl@yahoo.com

Keywords: PRL, RsaI polymorphism, PCR-RFLP, cattle, mammary gland

SUMMARY

Prolactin (PRL) is a protein hormone composed of 199 amino acids synthesized by the lactotrope cells from anterior pituitary gland. It is also produced in smaller quantities in other tissues, including mammary gland (Le Provost et al., 1994). The gene coding for prolactin is located in cattle on the chromosome pair 23. Together with growth hormone (GH), PRL stimulates mamogenesis, lactogenesis and galactopoiesis (Carsai et al., 2010). The increasing of blood prolactin concentrations during pregnancy leads to increasing of lactogen tissue growth, correlated after birth with an increased milk yield. Therefore is a valuable candidate gene for improving milk production in cattle and other species. In cattle several polymorphisms were described in PRL gene. Among these a silent A-G substitution from PRL exon three gives rise to a polymorphic RsaI site (Lewin et al., 1992) having an effect on milk production, although the results are conflicting (Chung et al., 1996; Chrenek et al., 1999; Dybus, 2002). The aim of our study was to determine the allelic and genotypes frequencies in PRL-RsaI 3rd exon site, in a primitive cattle breed with very low milk production, as is Romanian Grey Steppe breed. The amplification was performed with the primers described by Dybus et al. (2005) and the thermal cycling conditions as described by Carsai et al. (2011). The calculated allele frequencies were A=0.786; B=0.214 and the genotypes frequencies were: AA=0.571; AB=0.429; BB=0 (Fig. 1).

Acknowledgments. Work supported by UEFISCDI, Project PNIIRUTE 113/2010, code 224.

REFERENCES
