**Key Genes Involved in Development and Lactation Capacity of Mammary Gland in Cattle and Goats**

Teodora C. CARSAI, Valentin A. BALTEANU

University of Agricultural Sciences and Veterinary Medicine, Faculty of Animal Science and Biotechnologies, 3-5 Manastur Street, 400372 Cluj-Napoca, Romania; lzga.usamvej@yahoo.com

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**SUMMARY**

In the last years the understanding of genetic influences on mammary gland development and function received an increased attention, because the improvement of milk quantity and quality in farm species doesn’t have to compromise animal health. The variations registered in milk quantity and quality cannot be attributed just too a few genes, because the starting and maintaining of mammary gland secretor activity is controlled by a cascade of hormones, transcription factors, enzymes (Rosen, 2003), which all over the years suffered mutations which are probably the cause of these variations (Ghasemi et al., 2009). In this project we are planning a comparative molecular characterization, in two cattle and two goat breeds, of the genetic polymorphisms in genes codifying: 1) hormones which are coordinating de development and secretor activity of mammary gland: pituitary factor 1 (Pit1), growth hormone (Gh), insulin like growth factor 1 (Igf1), prolactin (Prl); 2) protein factors involved in hormonal signal transduction to the genes promoters codifying major milk proteins: prolactin receptor (Prlr), growth hormone receptor (Ghr), signal transducer and activator of transcription factor 5 (Stat 5); 3) key enzymes involved in milk fat synthesis: diacylglycerol-acetyltransferase (DGAT) and lactose: galactozyltransferase (Galt) and alpha lactoalbumin (Lalba). In cattle will be studied high productive individuals versus low productive individuals, belonging to Romanian black spotted, having as a Grey steppe cattle model. In goat will be studied high productive individuals versus low productive individuals, belonging to Carpathian breed, having as a model French alpine breed. We consider that studying of the genetic polymorphisms in the 10 key genes involved in lactation represents a unique opportunity in better understanding of their influence on milk production in cattle and goat.

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**REFERENCES**