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Bovine lactoferrin gene polymorphism and expression in relation to mastitis resistance – a review

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Abstarc :

Lactoferrin is an iron-binding protein present in many mammalian biological fluids, such as tears, saliva and milk, widely investigated due to its multiple activities. Human milk contains 1 to 5 mg of lactoferrin /ml, contrary to bovine milk, where lactoferrin concentration reaches maximum level of 0.1 mg/ml. Dramatic increase of lactoferrin content has been noticed in colostrum, mammary gland secretion during involution, and in milk yielded by females suffering from udder inflammation. Lactoferrin gene has developed during evolutional mutations in transferrin gene. It was mapped to bovine chromosome 22, contains 17 exons and spreads out on about 34.5 kilo base pairs (kbp) of genomic DNA. There are many polymorphisms in lactoferrin gene. Polymorphisms occurring in gene regulatory region seem to be particularly interesting, as they may affect a gene expression. It has been claimed, that lactoferrin gene expression in mouse and human uterus appeared under estrogen stimulation, but for bovine species the regulation of its expression has not been fully understood yet. Another possibility to find functional polymorphisms is to search for them in exons which code for lactoferrin antimicrobial peptides. Due to its relation to the innate immunity, lactoferrin gene is supposed to be a promising candidate gene for mastitis resistance trait.

Key Word :
cattle / gene polymorphism / lactoferrin gene / marker-assisted selection / mastitis

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