

## Expression of Insulin-like Growth Factors and Insulin-like Growth Factor Receptor in Milk Goat Mammary Gland

Haowei Ren, Bo Qu, Feng Zhao, Ye Lin, Qingzhang Li\*

The Key Laboratory of Dairy Science of Education Ministry (KLDS), Northeast Agricultural University

Mucui Street 59, Xiangfang District, Harbin, Heilongjiang Province, China

\* Corresponding Author E-mail: [qingzhangli@hotmail.com](mailto:qingzhangli@hotmail.com)

**KEY WORDS:** IGFs, Mammary Gland, Milk Goat, laser scanning confocal microscope.

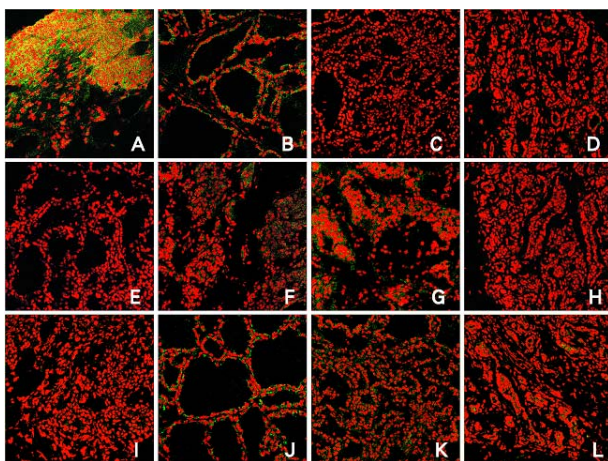
Insulin like growth factors (IGFs) are important growth factors in mammary gland development. The IGF-I and IGF -II are similar to insulin in their amino acid sequences. The primary signaling receptor through which both IGF-I and IGF-II exert their biological actions is the type I insulin-like growth factor receptor (IGF-IR).

The aim of this study was to identify and characterize the localization of IGFs and their receptor using laser scanning confocal microscope in milk goat mammary glands during virgin(V), pregnancy(P), lactation(L) and involution(I), and to provide a reliable theoretical basis and technical support of artificial control for milk production and milk quality of milk goats and other animals.

Immunostaining for IGF-I, IGF-II and IGF-IR were seen in every studied stage, ranging from weak to intense, mainly associated with the structures of the mammary parenchyma.

The expression of IGF-I increased significantly from virgin to pregnancy. And decreased significantly during lactogenesis and galactopoiesis followed by an increase during involution. The expression is in ductular epithelium, stroma and some adipocytes. IGF-I maintains the growth of normal mammary epithelial cells and suppress apoptosis.

The expression of IGF-II decreased in virgin and relatively high in pregnancy. And decreased during lactogenesis and galactopoiesis followed by an increase during involution. The expression is mainly in ductular epithelium and little in adipocytes. IGF-II to be one of the essential survival factors for the mammary epithelium.



The expression of IGF-IR increased significantly from virgin to pregnancy. Relative expression showed no significant differences during lactogenesis, lactation and involution. The expression is distinctly in adipocytes, and also has expression in alveolar epithelium and ductular epithelium.

**Figure 1. Immunohistochemical identification of IGF-I, IGF-II and IGF-IR in milk goat mammary gland development**

Immunohistochemical identification of IGF-I, IGF-II and IGF-IR in milk goat mammary gland development was examined by laser scanning confocal microscope, the green stain is fluorescence signals. PI counterstain. Magnification 400 $\times$ . (A-D) IGF-I in milk goat mammary gland, V5M, P5M, L1M, I3D. (E-H) IGF-II in milk goat mammary gland, V5M, P3M, L1M, I3D. (I-L) IGF-IR in milk goat mammary gland, V3M, P5M, L1M, I3D.