

Detection on the Changes of κ -casein during Mammary Development with Direct immunofluorescence and Image Analysis

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Abstract: The development of mammary gland was closely related to lactation function. To study the postembryonic morphological development of dairy goat mammary gland, the changes of κ -casein during mammary development and differentiation were observed using direct immunofluorescence and image analysis in this research. The expression of κ -casein gene was simultaneously detected with relatively quantitative analysis using fluorescent quantitation PCR, which were carried out to interpret the changing rules of κ -casein on the expression and transcription level. The results indicated that κ -casein appeared mid-pregnancy during mammary growing, advanced gradually and reached the peak in lactation, and decreased step by step in involution. A bulk of κ -casein cumulated inside alveolus epithelium cells not lumina during late-pregnancy because that κ -casein usually was transported out cells by micelle secretion. The expression of κ -casein gene was very low in virgin, increased fast after early pregnancy. The expression level of κ -casein was stable during lactation, and there was no difference among different lactational stage samples, but the expression level of κ -casein gene had significant difference. It was concluded that the expression of κ -casein were controlled by several mechanisms. The expression of κ -casein and its gene began to descend gradually in early involution, however which had significant difference compared with that of virgin because of preparing for next gestation probably.

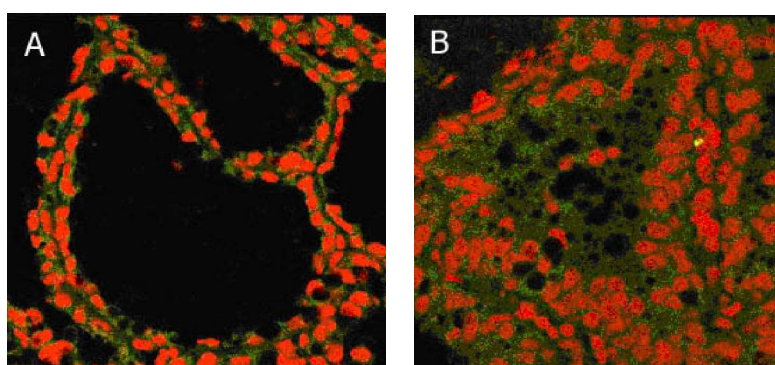


Figure 1. Changes of κ -casein in pregnant and lactating mammary gland of dairy goat

A. pregnant 5 months, B. lactating 60 days (400 \times)

Confocal images of dairy goat mammary gland, showing κ -casein (green) and cell nucleus (red). A) A bulk of κ -casein cumulated inside alveolus epithelium cells not lumina during late-pregnancy because of micelle secretion. B) Lots of κ -casein appeared in both epithelium cells and lumina during lactating.