EXPRESSION AND LOCALIZATION OF CALCIUM-SENSING RECEPTOR (CASR) IN BOVINE MAMMARY TISSUE DURING THE PERIPARTURIENT PERIOD.

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ABSTRACT

The goal of our research is to understand the regulation of mammary gland calcium homeostasis. Extracellular calcium has been found to regulate cell functions in tissues involved and uninvolved in mineral ion homeostasis via CaSR. To date, a role for CaSR in mammary gland calcium homeostasis regulation has not been investigated. The objectives of this study were to determine if pregnancy and/or lactation affect the expression of CaSR in mammary gland and to investigate the relationship of the milk calcium secretion with the CaSR expressed in the mammary gland, and also to cellular localization of CaSR in mammary tissues during periods of mammary gland development and lactation. We found that CaSR mRNA expression in bovine mammary tissues increased 2-3 times one week prepartum and remained constant through the experimental period but there was no correlation between cows' plasma calcium and the cows' total first milk calcium to the CaRS expressed in the mammary gland. The CaSR cellular locations were found mainly in mesenchymal cells, fibroblast like cells, fat storage cells, myoepithelial cell, the mammary ductular epithelium, and capillaries and arteries endothelial cells of rat mammary tissue.

Key Words: bovine mammary gland; Calcium-Sensing Receptor; CaSR; calcium; mammary calcium homeostasis; lactation; milk fever; parturition; periparturition.

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