

Evidence that Relaxin Promotes Development of the Mammary Gland by Direct Local Actions on the Functional Relaxin Receptors in Pigs

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Relaxin promotes development of the mammary parenchyma during the last third of gestation in gilts, and the specific relaxin-binding sites were present in the mammary gland. This study was conducted to determine if relaxin-binding sites in the mammary gland were functional relaxin receptors. Three cycling cross-bred gilts were bilaterally ovariectomized on day 0 of the experiment. Beginning on day 15 and continuing through day 29 post-surgery, the gilt received an im. injection of estradiol benzoate at 12-hr intervals. Beginning on day 22 post-surgery, highly purified porcine relaxin was administered (1ug/hr) into the left fourth mammary gland from the anterior end via miniature osmotic pump. Physiological saline was administered to the right fourth mammary gland. The gilt was sacrificed on day 29 post-surgery and histological characteristics of the mammary parenchyma were examined. The mammary glands treated locally with saline showed little, if any, lobulo-alveolar development, whereas the mammary glands treated with relaxin showed not only marked lobulo-alveolar development but also prominent secretions in the alveoli. The saline-treated glands was characterized by relatively dense and highly organized collagen fiber bundles. Whereas, in the relaxin-treated mammary glands, collagen fiber bundles were dispersed and loosely organized. In conclusion, relaxin-binding sites in the mammary gland are functional relaxin receptors and relaxin acts directly on the pig mammary gland to promote development of the alveoli and remodeling of the extracellular matrix.

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