

Effects of different physiological concentrations of estradiol on porcine oviductal cells

Effekte unterschiedlicher physiologischer Östradiolkonzentrationen auf porcine Oviduktzellen

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Prostaglandins play important roles in the cellular crosstalk of reproductive tissues. Especially prostaglandin E₂ (PGE₂) turned out to be a survival factor of the early embryo. Ovarian steroids stimulate PGE₂ production in bovine oviductal cells in vivo and in vitro. In the oviduct concentrations of ovarian steroids, especially estradiol, vary significantly throughout the estrous cycle. The aim of this study was to investigate comparative to the bovine system the effects of different physiological concentrations of estradiol (10 pg-250 ng/ml) on the estradiol-PGE₂-pathway in an established porcine oviductal epithelial cell line. Western blot with subsequent immunodetection demonstrated the presence of the estradiol receptor alpha in the cell line. The transfection protocol for the cell culture was optimized according to number of cells, type of transfection reagent, time of transfection and transfection reagent / DNA ratios. Involvement of transcription factors in the estradiol-PGE₂-pathway was checked by transfecting reporter vectors of a pathway profiling system and subsequent stimulation with estradiol. The transcriptional profile reveals that estradiol activates the NF-κB pathway. Hereupon cells were transiently transfected with a NF-κB vector and stimulated with different concentrations of estradiol (10 pg-250 ng/ml). NF-κB activation occurred between 10 and 100pg estradiol/ml. In conclusion estradiol stimulates NF-κB activation even in porcine oviductal epithelial cells. Concentration dependency however differs from the formerly investigated bovine system especially at high concentrations of estradiol.

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