

# Prolactin gene expression in the pituitary of rats subjected to vaginocervical stimulation requires Erk-1/2 signaling

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## Abstract

Vaginocervical stimulation (VCS) induces twice-daily prolactin (PRL) surges resulting in pseudopregnancy in the rat. Furthermore, activation of the extracellular signal-regulated kinase-1/2 (Erk-1/2) is involved in the effect of estradiol (E-2) on the Prl gene expression in pituitary cells. Herein, we investigated whether Erk-1/2 signaling is involved in the control of Prl expression in the pituitary of VCS rats and whether VCS regulates the effect of E-2 on Erk-1/2 and Prl in the pituitary. Estrous rats were assigned as control or VCS groups and 0, 6, 12 or 24 h later the levels and localization of phosphorylated Erk-1/2 (p-Erk-1/2) were analyzed in the pituitary. The effect of an Erk-1/2 inhibitor PD98059 on the Prl level in the pituitary of control or VCS rats was also analyzed. Other control or VCS rats were treated with E-2 and the level of p-Erk-1/2 and Prl were measured in the pituitary. In control rats, p-Erk-1/2 decreased at 6 and 12 h and increased at 24 h while Erk-1/2 was phosphorylated at all time points in VCS rats. p-Erk-1/2 was localized only in the anterior pituitary. PD98059 decreased Prl level in VCS, but not in control rats. Estradiol decreased Erk-1/2 phosphorylation although did not change Prl level in the pituitary of control or VCS rats. These findings show that prolonged activation of Erk-1/2 is necessary to induce Prl expression in the pituitary of VCS rats; however, VCS does not influence the role of E-2 on the activation of Erk-1/2 and Prl expression the pituitary.

## Keywords

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