DECREASED EXPRESSION OF OESTROGEN RECEPTOR β IN THE REPRODUCTIVE TRACT OF PREGNANT RELAXIN-DEFICIENT (*Rlx*$^{-/-}$) MICE

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The peptide hormone relaxin (RLX) is reported to directly affect uterine oestrogen receptors (ERs) in the rat (1). Treatment of immature ovariectomised rats with porcine RLX causes a decrease in uterine ERβ mRNA levels within 6 h. However, RLX has no effect on ERα expression. As both ERβ1 and ERβ2 inhibit ERα-mediated transcriptional activity, this RLX-induced downregulation in ERβ could be a prerequisite for oestrogen to exert its effects on target tissues. The aim of the current study was to use relaxin-deficient (*Rlx*–/–) pregnant mice to investigate if relaxin deficiency results in alterations in either ERβ or ERα mRNA expression in reproductive tissues. Cervix and vagina tissues were obtained from adult C57/Blk6J wild-type mice at five stages of gestation (Days 7.5, 10.5, 14.5, 17.5, 18.5 pc) and *Rlx*–/– littermates on Days 7.5, 14.5 and 18.5 pc. Q-PCR with TaqMan probes in the Opticon 2 thermal cycler (MJ Research, GeneWorks) was used to quantify ERα and ERβ gene expression. ERα mRNA levels were significantly ($P < 0.05$; ANOVA) increased in the cervix/vagina on Days 17.5 and 18.5 pc in *Rlx*+/+ mice. The increase in ERα in *Rlx*+/+ mice was negatively correlated with a significant decrease in ERβ expression from Day 14.5 pc. In contrast, there was no decrease in ERβ gene expression in the cervix/vagina of *Rlx*–/– mice; ERβ mRNA levels were significantly ($P < 0.05$) higher compared to *Rlx*+/+ mice on Days 14.5 or 18.5 pc. However, there was no corresponding reduction in ERα expression in the cervix/vagina of the *Rlx*–/– mice, so that ERα mRNA levels were still elevated at term despite the maintenance of high ERβ expression. In summary, these data show changes in ERβ expression in the cervix/vagina of relaxin-deficient mice, which may subsequently affect ERα-mediated transcriptional activity.

(1) Pillai *et al*. (2002) *Biol. Reprod.* **67**, 1919–1926.

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