O-1 Expression Profiles of Small Proline-Rich 2 (SPRR2) Family Genes in Mouse Reproductive Organs; Ovary, Oviduct, Uterus, and Testis

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Background & Objectives: In our previous studies, we have shown by cDNA microarray analysis that SPRR2a mRNA is strongly up-regulated by estrogen (E_2) treatment in ovariectomized (OVX) mice uterus. In addition laser capture microdissection (LCM) showed that some members of SPRR2 family were dominantly induced in luminal epithelial cells. The aim of this study was to investigate the expression pattern of SPRR2 family genes in the mouse reproductive organs at mRNA level and examined the effects of E_2 and/or progesterone (P_4), E_2-dosage, and ICI 182, 780 (pure anti-estrogen; ER blocking reagent) on the SPRR2 family genes regulation using OVX mice uterus.

Method: In young (3 weeks old) and adult (8 weeks old) mice, the expression levels of SPRR2 family mRNAs were examined by semi-quantitative RT-PCR. For a further characterization of SPRR2 family genes expressed in the mouse uterus, the effects of E_2-dosage, P_4, and ICI 182, 780 on the regulation of SPRR2 family genes were investigated using semi-quantitative RT-PCR and OVX mice model.

Results: First, SPRR2 family genes showed very low or no expression in ovary, oviduct, and testis in both young and adult mouse. Expectedly, they were highly expressed in adult mice uterus more than young mice uterus. Second, the expression patterns of SPRR2a, 2b, 2c, and 2d mRNAs showed tightly E_2-regulated pattern by E_2, P_4, and ICI 182, 780 treatment. In addition, ICI 182, 780 pretreatment attenuate the E_2 up-regulated expression of SPRR2a, 2b, and 2e mRNAs. On the other hand, P_4 single-injection rapidly up-regulate the expression level of SPRR2c, 2f, and 2g mRNAs.

Conclusions: We attempted to classify SPRR2 family genes into three groups based upon the expression patterns in mouse uterus. These data showed that SPRR2 family genes were expressed in adult mouse uterus among the reproductive organs and some members of SPRR2 family genes up-regulated by E_2 suggested that SPRR2 family genes may play an important role in mature mouse reproduction and uterine physiological changes.