Expression of AUF1/hnRNP D, a regulator of mRNA degradation, is controlled by estrogen in rat uterus

Y. Arao [1,2], A. Kikuchi [1,2], and F. Kayama [1,2]

[1]Jichi Medical School, Tochigi, Japan, [2]Crest, JST, Japan

Environmental endocrine disrupters affect the reproductive organs of various species. It is expected that these chemicals regulate the gene expression same as steroid hormones (SHs) in vivo. It is well known that the SHs-mediated gene expression is regulated at the transcriptional and post-transcriptional steps. Previously we reported that estradiol (E2)-mediated post-transcriptional regulation is controlled by the different manner of ER-mediated transcription (1). However, the post-transcriptional regulation mediated SHs is still little understanding. To investigate the molecular mechanism in mRNA stabilization mediated SHs, in this study, we focused on a RNA binding protein (RBP), AUF1/hnRNP D (AUF1). AUF1 is known as a regulator of mRNA degradation mediated ARE (AU rich element) in the 3'-UTR of some mRNAs (e.g. c-fos, c-myc, TNFa).

We tested the level of AUF1 mRNA in immature rat uterus and ovary with or without estradiol (E2) using RT-PCR. AUF1 consists of four isoforms (p45, p42, p40 & p37), which are generated by alternative splicing, we made specific primer sets for detection of the four isoform mRNAs. Four isoforms of AUF1 are expressed equally in uterus and ovary without E2. When the treatment of E2, the subsets of AUF1 isoforms (p42 & p37) mRNA were decreased in uterus within 6 hr. In ovary, E2 did not affect the expression of AUF1 isoform mRNAs. Recently, Loflin et al. suggested that AUF1 p42 and p37 stimulate the mRNA degradation (2).

Accordingly, we will present the candidate of the E2-dependent stabilized gene product in rat uterus.

(1) Arao,Y., et al. Biochem. J., 313; 269 (1996)
(2) Loflin,P., et al. Genes Dev., 13; 1884 (1999)