[P3-581] Effects of Estrogen on Sodium/Iodide-Symporter and Thyroid Peroxidase Gene Expression in Female Rats

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Inroduction: Estrogen receptors have been demonstrated in thyroid tissue. However, the role of estrogens in thyroid function is still poorly understood. We evaluated the effects of estrogen (17b-estradiol: E2) in female rats on Sodium/Iodide- Symporter (NIS) and Thyroid Peroxidase (TPO). **Materials and Methods**: The expression of NIS and TPO in thyroid tissue was performed with RT-PCR utilizing ovariectomized (OVX) OVX+E2-treated adult SD. For PCR amplification of rat NIS and TPO the following sense and antisense primers were used: for NIS, 5'-TCT TCC TGG CCT GTG CCT ACA-3' and 5'GCC CGA GTC CAT TCC AGA ACT-3'; for TPO, 5'- GCA CCT TGG ATC TGG CAT CAC-3' and 5'-TGT GGG AAG GTC TCC CTC CAT-3'. RNeasy Mini Kit (Quiagen) was used to isolate total RNA following the manufacturer's directions. The RNA was eluted and the optical density was obtained using a spectrophotometer. RT reaction: Using the OD's, 1 microgram of total RNA was made into cDNA in the first strand RT reaction of the PCR. The procedure (Invitrogen) was followed using the random hexamers to produce the cDNA utilized in the PCR reaction. PCR Reaction: All samples were run for quantification utilizing Real Time-PCR in a LightCycler machine from Roche Applied Science. The RT-PCR used SYBR Green in the PCR and the fluorescence from each sample was measured continuously in every cycle during PCR, and plotted against cycle number. Absolute quantification was possible by comparing the genes (NIS and TPO) to standard curves for those genes along with a housekeeping gene which in this experiment was18S. A ratio between the fluorescent measurements obtained with either NIS or TPO and that obtained with 18S in the same reaction was calculated. **Results**: A significant decrease in NIS mRNA expression was found in OVX+E2 rats as compared with OVX rats (7.91 ±1.74 U vs 3.47 ± 0.58 U in OVX vs OVX+E2 rats, $P<0.01$). Also TPO mRNA expression was lower in OVX+ E2 rats as compared to OVX rats, although the difference did not reach the statistical significance (33.93± 8.2 vs 22.77± 6.52 in OVX vs OVX+E2 rats, $P= 0.1$). **Conclusions**: Our data demonstrate that, in female rats, estrogen deprivation induces an up-regulation of both NIS and TPO genes, which, for NIS, reaches the statistical significance. Estrogen treatment on the contrary, reduces the expression of both genes. Through this mechanism, estrogen deprivation in menopausal and aged women may have important influences on thyroid physiology.

Nothing to Disclose: GC, ML, GC, IM

Date: Monday, June 6, 2011
Session Info: POSTER SESSION: BASIC/TRANSLATIONAL/CLINICAL - Thyroid Gland Development & Function (1:30 PM-3:30 PM)
Presentation Time: 1:30 pm
Room: Expo