TRANSCRIPTIONAL EXPRESSION OF KISSPEPTIN, NEUROKININ B, DYNORPHIN (KNDY), SEX STEROIDS AND THEIR RECEPTORS IN THE HYPOTHALAMUS OF POLYCYSTIC OVARY SYNDROME RAT MODELS INDUCED BY ESTRADIOL OR TESTOSTERONE.

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Introduction: We investigated expression of genes related to physiology of sex steroids and important neuroendocrine peptides in hypothalamus of the polycystic ovary syndrome (PCOS) rat models.

Objective: To evaluate the expression of Kiss1, Kiss1r, Tac3, Tac3r, Esr1, Esr2, Ar, Pdyn and Oprk1 in the hypothalamus of PCOS rat models induced by estradiol or testosterone.

Material and methods: Thirty female rats aged between 0-3 d of age were sorted in three groups according with sc injection of the following compounds: testosterone (1.25 mg) (TG; n=10), estradiol (0.5 mg) (EG; n=10) and vehicle, as control (CG; n=10). At 90 d, the rats were euthanized and the hypothalamuses were removed to evaluation of transcriptional expression of Kiss1, Kiss1r, Tac3, Tac3r, Esr1, Esr2, Ar, Pdyn and Oprk1 by qRT-PCR. CG served as reference sample and its value of expression is always 1.000. Statistical analysis was performed using ANOVA.

Results: TG animals had increased Ar expression (Relative quantification [RQ]=1.140±0.185) in comparison to CG (P<0.04). Kiss1 expression was lower in EG (RQ=0.399±0.128) and TG (RQ=0.705±0.242) compared to CG (P<0.0001). Conversely, Kiss1r was overexpressed in EG (RQ=1.208±0.090) compared to CG (P<0.01). In EG and TG rats Esr1 gene was downregulated compared to CG, with RQ=0.761±0.108 and RQ=0.849±0.201, respectively (P<0.01). Esr2 was more expressed in TG (RQ=1.246±0.313) than CG (P<0.02). In EG, Tac3 was downregulated (RQ=0.783±0.156 and Oprk1 was upregulated (RQ=1.173±0.118) compared to CG (P<0.01 and P<0.05, respectively).

Conclusion: PCOS rat models exhibited altered expression of genes related to neuroendocrinology, this alteration might account for chronic anovulation in those rats and possibly in human PCOS.