Estriol promotes early progesterone receptor B up regulation in a gestational diabetes in *vitro model*

Santos, S.I.F.[2]; Santos, J.F.[1]; Borçari, N.R. [1]; Rodrigues, L. [1]; Azevedo-Martins, A.K.[1]; Nunes, V.A[1].

[1]School of Arts, Sciences and Humanities, University of Sao Paulo, Sao Paulo, Brazil; [2]Federal University of Juiz de Fora, Minas Gerais, Brazil

Introduction. The use of progesterone in pharmacological concentrations to prevent preterm delivery has been related to the increased risk to gestational diabetes (GD) development. We have shown that progesterone is able to trigger β cells death and estrogens potentiate this progesterone effect. Since the expression of progesterone receptors (PR) is under control of estrogens in some tissues, we proposed that these hormones could regulate PR expression, also in pancreatic beta cells. **Objective.** The aim of this work was evaluate the effect of estradiol and estriol on the regulation of the PRB (a physiologically active cytosolic receptor) and of PRmrc1 (membrane component receptor 1) expression in the insulin-producing cell line RINm5F. **Material and Methods.** Cells were treated with the steroids in pregnancy physiological (0.1 μM) and pharmacological (1 and 10 μM) concentrations for 6 and 24 h. After, cells were collected by trypsinization and total RNA was extracted by Trizol® method. Gene expression was analyzed by real time PCR using specific primers for PRB and PRmrc1. HPRT was used as internal control gene. **Results and Discussion.** Treatment of cells with estriol or estradiol by 6 h slightly affected PRmrc1 expression. In contrast, 0.1, 1.0 and 10 μM estriol treatment for 6 h increased PRB expression by 14, 30 and 7-fold, respectively in comparison to untreated cells. Expression of PR was less affected after incubation of RINm5F cells for 24 h with the estrogens. These results confirm that estrogens can regulate the expression of PR also in pancreatic cells, which may represent a mechanism to modulate progesterone action on these cells. **Conclusion.** The presented data may contribute for the better understanding of the interaction between steroid hormones and insulin producing cells, opening perspectives to the future treatment and therapeutic strategies for the GD management.

Keywords: estriol, estradiol, progesterone receptor, gestational diabetes.

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