Poster

Study of the influence of PR-01 drug on endometrial functionality

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ABSTRACT

Motivation: Embryo implantation is the process in which the embryo, in the blastocyst stage, adheres to the endometrium and gestation begins. During this period, the uterus undergoes molecular and morphological changes to achieve a good embryo implantation, and therefore, a successful pregnancy. Implantation failure is a problem of patients with infertility undergoing in vitro fertilization and embryo transfer (1). Signal transducer and activator of transcription 3 (STAT3) plays an important role in various cellular processes such as development, cell proliferation, apoptosis and homeostasis in a variety of tissues. Moreover, STAT3 dependent signals are essentials for a successful pregnancy (2). In presence of cytokines and growth factors, STAT3 is activated by phosphorylation, resulting in dimers that translocate into the nucleus, binding to the promotor of target genes, leading to gene expression. STAT3 is specifically activated during embryo implantation (3).

Methods: We have studied protein expression levels of STAT3 and STAT3P (Tyr 705) from rat uterus biopsies by Western Blot. The samples were organized into 4 experimental groups: Vehicle (V) + D2 (early pregnancy), PR-01 + D2, V + D6 (late pregnancy) and PR-01 + D6. To quantify the protein expression of STAT3 and STAT3P and normalize it with the constitutive protein actin, Image Lab program was used. Statistical analysis was perfomed using the Statgraphics software. One-way analysis of variance was used to determine significant differences between groups of samples.

Results: In the drug-administered groups, STAT3P expression was higher than in the vehicle-only groups. Moreover, STAT3P expression was 91,08% higher in the PR-01 + D6 group than in the PR-01 + D2 group ($p \leq 0.05$). No significant differences in STAT3 expression were observed between the drug-administered groups. However, the expression of STAT3, both in the groups where the drug was administered and in those that were not administered, was greater than the the expression of STAT3P, a result that was expected since the expression of STAT3P should always be lower than those of STAT3 because it detects the total of STAT3.

Conclusions: Our preliminary results suggest that the drug PR-01 could promote the activation of STAT3, increasing the expression of STAT3P in the endometrium of rats, and therefore, modifying the chemical signaling of the cell, which could successfully involve an improvement on endometrial functionality.

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