Klinik und Poliklinik für Frauenheilkunde und Geburtshilfe

Control of glycosylation pattern of hCG through early pregnancy factors

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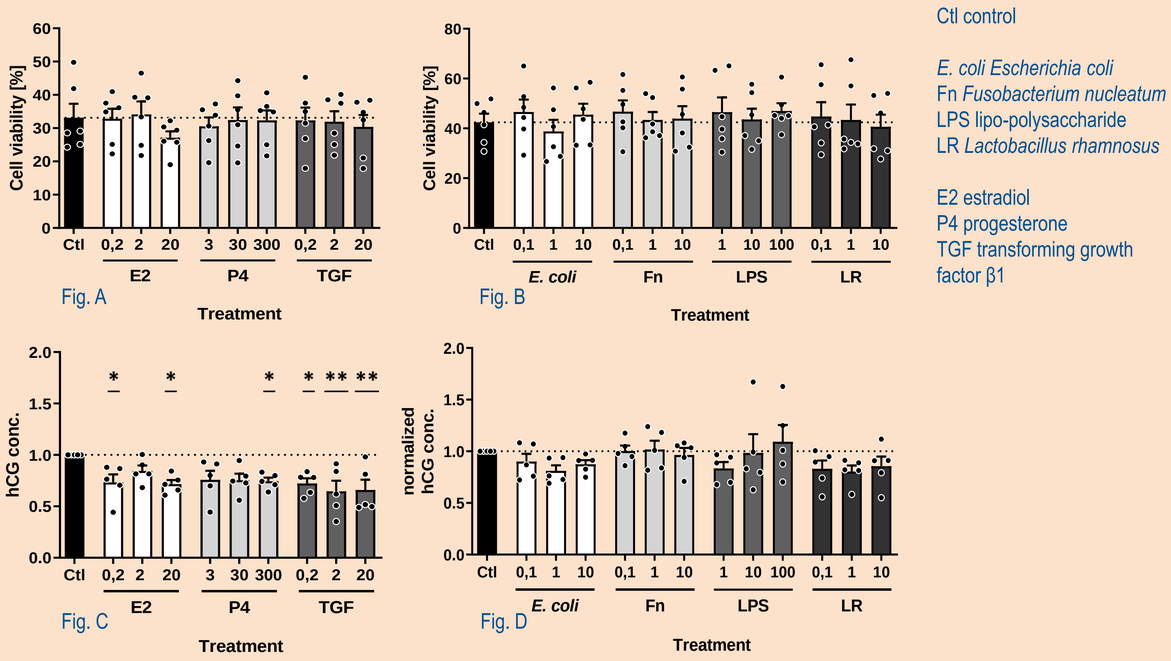
Introduction

Trophoblast cells play a central role in coordinating the first steps of implantation and placentation. The trophoblast-derived hormone hCG commands multiple necessary adaptations for a successful placentation, as trophoblast invasion, angiogenesis and immune tolerance. Two forms of hCG dominate during pregnancy, being the hyperglycosylated form (hCG-H) the predominant variant during early pregnancy. Altered levels of hCG-H are associated to pregnancy disturbances. The mechanisms controlling the glycosylation during early pregnancy are poorly understood. In this project, the role of early pregnancy factors, including hormones, cytokines and the microbiome, will be evaluated in the context of the regulation of hCG glycosylation *in vitro*.

Results



Ctl control

E. coli Escherichia coli
Fn *Fusobacterium nucleatum*
LPS lipo-polysaccharide
LR *Lactobacillus rhamnosus*

E2 estradiol
P4 progesterone
TGF transforming growth factor β1

JEG-3 cells were stimulated with bacteria, hormones or cytokine for 48 hours. Subsequently, cell viability [Fig. A, B] and hCG secretion [Fig. C, D] were analyzed.

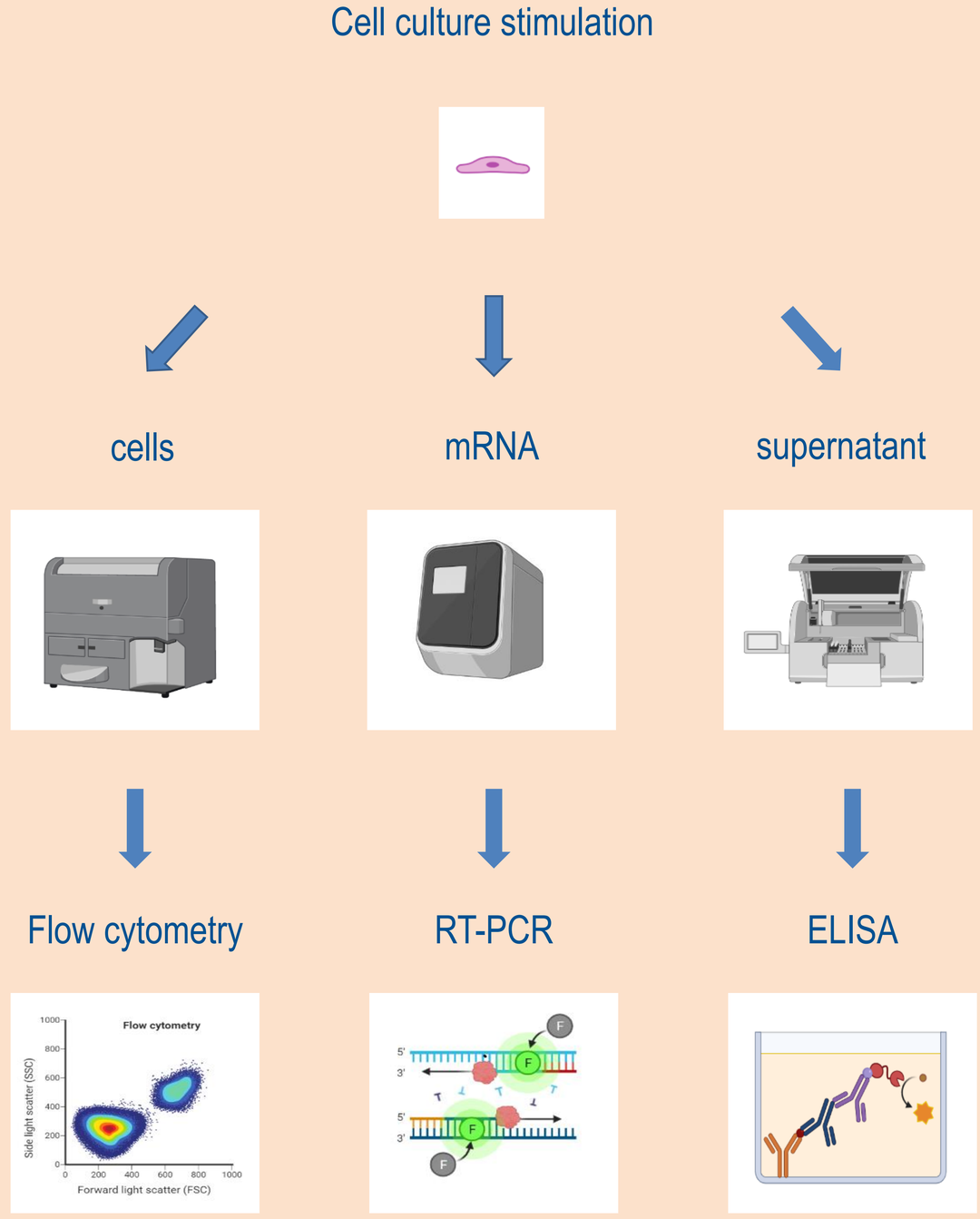
No changes in cell viability were detected after 48 hours of stimulation [Fig. A, B].

The released hCG concentration after stimulation with bacteria remained unchanged compared to non-stimulated cells (Ctl) [Fig. C].

Hormonal stimulation reduced the secretion of hCG compared to non-stimulated cells [Fig. D].

The stimulation procedures were carried out six times, the statistics are performed with ANOVA fol Dunnett's Multiple Comparison Test (*p<0,05, **p<0,01).

Methods



Conclusion

Our results show that the selected bacteria do not affect the cell viability or the hCG secretion.

While the cell viability was also not significantly influenced by the chosen hormones estradiol (E2) and progesterone (P4) and the cytokine TGF-β1 (TGF), the hCG secretion did however decrease compared to non-stimulated cells (Ctl).

The proportion of hCG versus HCG-H will be further investigated by Western Blot analysis.

The results so far point to a hormone-dependent regulation of hCG and encourage further experiments to determine long term effects of hormonal stimulation.

CYNCREDIBLE

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