


[< Previous Article](#) [Next Article >](#)

Article Contents

[Introduction](#)[Materials and methods](#)[Results](#)[Discussion](#)[Data availability](#)[Conflicts of interest](#)[Declaration of funding](#)[Author contributions](#)[Acknowledgements](#)[References](#)

Towards understanding mare endometriosis: ex vivo study on the role of relaxin

Magdalena Profaska, Marta Zarzycka , Klaudia Dubniewicz, Maciej Witkowski, Jaroslaw Wieczorek, Dorota Gil, Samuel Wafula, Do Kim Lanh, Malgorzata Kotula-Balak 

Handling editor: Greg Johnson

+ Author & Article Information

Reprod Fertil Dev (2025) 37 (18): RD25166.

<https://doi.org/10.1071/RD25166> [Article history](#) 

PubMed:41291992

 Share  Get Permissions Cite 

Context

Mare endometriosis remains a poorly understood pathological process.

Aims

Mare endometrial tissue with endometriosis was used to determine the effects of relaxin (RLX). Healthy tissues that were left untreated (H), or treated with vehicle (H_{veh}), and tissues with endometriosis that were left untreated (E), treated with vehicle (E_{veh}), and treated with RLX (10, 25, 50 nM; E_R) were used for an ex vivo system for 72 h.

Methods

Tissue histological examination, and immunoenzymatic measurement of the concentrations of transforming growth factor β (TGF- β), interleukins (IL-6 and IL-8), and progesterone were performed. Western blotting was used to study the abundance of the following proteins involved in cellular processes, signaling, and interactions: N-cadherin, cortactin, Wnt/ β -catenin signaling with kinases: glycogen synthase kinase-3 β (GSK-3 β), protein kinase B (AKT), metalloproteinases: MMP9, MMP2, and cyclins: D1, D3.

Key results

RLX (50 nM) decreased the concentration of TGF- β , increased concentrations of IL-6 and IL-8, and decreased the concentration of progesterone, without histological alterations of the treated tissues. Interactions of RLX with proteins showed changes in protein abundance, as follows: N-cadherin increased, cortactin increased, β -catenin, GSK-3 β and AKT showed an increase of phosphorylation, MMP2 and MMP9 increased, and cyclin D3 increased in E_R versus E.

Conclusions

Results indicated that RLX exerted both anti-/pro-inflammatory as well as anti-/pro-fibrotic effects depending on interacting cytokine/protein.

Implications

In equine breeding, the application of RLX with marker protein antagonists/agonists may be promising in endometrial fibrosis treatment.

Keywords: [cell signaling](#), [cytokines](#), [endometriosis](#), [ex vivo culture](#), [hormone–protein interactions](#), [mare](#), [relaxin](#)