Zhao et al. 1999 Am J Reprod Immunol. Nov;42(5):303-11.

The expression of granulocyte macrophage-colony stimulating factor (GM-CSF) and receptors in human endometrium.

Zhao Y[1], Chegini N. [1]Department of Obstetrics and Gynecology, University of Florida, Gainesville 32610, USA.

Abstract

PROBLEM: To determine the temporal and spatial expression of granulocyte macrophage-colony stimulating factor (GM-CSF) and GM-CSF alpha and beta receptor mRNA and protein in human endometrium.

METHOD OF STUDY: The endometrial expression of GM-CSF and GM-CSF receptor mRNA and protein was determined using competitive quantitative reverse transcription polymerase chain reaction (Q-RT-PCR), in situ hybridization, and immunohistochemistry.

RESULTS: Endometrium expresses GM-CSF and GM-CSF alpha receptor mRNA with maximal expression occurring during the mid-secretory phase (21.1 +/- 4.2 and 32.2 +/- 7.7 x 10(6) mRNA copies/microg total RNA) compared to the proliferative phase (1.46 +/- 0.4 and 7.5 +/- 0.5 x 10(6) copies) of the menstrual cycle, with a significant reduction (0.67 +/- 0.1 and 1.7 +/- 0.2 x 10(6) mRNA copies) during the post-menopausal period ($P < 0.05$). The endometrium expresses a significantly lower level of GM-CSF beta receptor mRNA (approximately 0.01 x 10(5) mRNA copies). Endometrial luminal and glandular epithelial cells are the primary site of GM-CSF mRNA and protein expression, while arteriole endothelial, stromal, and inflammatory cells are the primary site of GM-CSF alpha receptor protein. GM-CSF beta receptor protein has a similar cellular distribution as GM-CSF.

CONCLUSION:

Temporal and spatial expression of GM-CSF and GM-CSF receptors in human endometrium during the menstrual cycle suggests that epithelial-derived GM-CSF in an autocrine/paracrine manner may influence various endometrial biological activities, local inflammatory response, and macrophage survival.