POSTER 27

Lack of Evidence for Functional LHCGR in Human Cultured Endometrial Stromal Cells

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The luteinising hormone/chorionic gonadotropin receptor (LHCGR) is a g-protein coupled receptor essential for the maintenance of pregnancy through its functions in the ovary. In addition to other gonadal functions, LHCGR is purported to be expressed and functional in human endometrium, including being linked to decidualisation. However, several studies have previously challenged these assumptions, making extra-gonadal LHCGR expression and function a contentious issue.

To investigate the presence of LHCGR in endometrium, the expression of a battery of receptors was determined using RNA-sequencing on whole tissue and cultured stromal cells from human endometrial biopsies. We further assessed intracellular cyclic AMP after treatment with gonadotropins or other hormones to assess LHCGR function. The effects of LHCGR on decidualisation were measured by inducing decidualisation with and without gonadotropin stimulation and monitoring secretion of critical decidua markers. Finally, we tested the bioactivity of our gonadotropins with cyclic AMP and cell proliferation assays in HEK-293 transfected to express LHCGR.

Here we show minimal expression of LHCGR in whole endometrial tissue and in cultured stromal cells. Neither luteinising hormone or chorionic gonadotropin was able produce a statistically significant increase in intracellular cyclic AMP, but the ability to generate a response was shown upon forskolin and prostaglandin E2 treatment. Our decidualisation assays showed that neither gonadotropin was necessary or sufficient for decidualisation. Finally, experimentation in HEK-293 confirmed the bioactivity of our human chorionic gonadotropin.

Our results challenge the consensus of the field that LHCGR is expressed in human endometrium and functionally involved in decidualisation.

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