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A Comparative Cross-Platform Meta-Analysis to Identify Potential Biomarker Genes Common to Endometriosis and Recurrent Pregnancy Loss

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Abstract: Endometriosis is characterized by unwanted growth of endometrial tissue in different locations of the female reproductive tract. It may lead to recurrent pregnancy loss, which is one of the worst curses for the reproductive age group of human populations around the world. Thus, there is an urgent need for unveiling any common source of origin of both these diseases and connections, if any. Herein, we aimed to identify common potential biomarker genes of these two diseases via in silico approach using meta-analysis of microarray data. Datasets were selected for the study based on certain exclusion criteria. Those datasets were subjected to comparative meta-analyses for the identification of differentially expressed genes (DEGs), that are common to both diagnoses. The DEGs were then subjected to protein-protein networking and subsequent functional enrichment analyses for unveiling their role/function in connecting two diseases. From the analyses, 120 DEGs are reported to be significant out of which four genes have been found to be prominent. These include the *CTNNB1*, *HNRNPAB*, *SNRPF* and *TWIST2* genes. The significantly enriched pathways based on the above-mentioned genes are mainly centered on signaling and developmental events. These findings could significantly elucidate the underlying molecular events in endometriosis-based recurrent miscarriages.

Keywords: endometriosis; recurrent pregnancy loss; meta-analysis; functional enrichment; TWIST2 gene

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1. Introduction

Endometriosis is commonly known as a chronic condition that has been characterized by the growth of endometrial tissue in sites other than the endometrium [1]. This may result in the abnormal growth of endometrial cells outside the uterus and cause a painful condition. According to NHS-UK, symptoms include severe pelvic pain during periods, sex, urination and defacation. Major symptoms could be constipation, diarrhea, and even blood during urination. Women also face difficulties in getting pregnant