

# **Sex Steroid Receptors in Polycystic Ovary Syndrome and Endometriosis: Insights from Laboratory Studies to Clinical Trials**

## **ABSTRACT**

Polycystic ovary syndrome (PCOS) and endometriosis are reproductive disorders that may cause infertility. The pathology of both diseases has been suggested to be associated with sex steroid hormone receptors, including oestrogen receptors (ER), progesterone receptors (PRs) and androgen receptors (ARs). Therefore, with this review, we aim to provide an update on the available knowledge of these receptors and how their interactions contribute to the pathogenesis of PCOS and endometriosis. One of the main PCOS-related medical conditions is abnormal folliculogenesis, which is associated with the downregulation of ER and AR expression in the ovaries. In addition, metabolic disorders in PCOS are caused by dysregulation of sex steroid hormone receptor expression. Furthermore, endometriosis is related to the upregulation of ER and the downregulation of PR expression. These receptors may serve as therapeutic targets for the treatment of PCOS-related disorders and endometriosis, considering their pathophysiological roles. Receptor agonists may be applied to increase the expression of a specific receptor and treat endometriosis or metabolic disorders. In contrast, receptor antagonist functions to reduce receptor expression and can be used to treat endometriosis and induce ovulation. Understanding PCOS and the pathological roles of endometriosis sex steroid receptors is crucial for developing potential therapeutic strategies to treat infertility in both conditions. Therefore, research should be continued to fill the knowledge gap regarding the subject.