

Biomarker Studies Revealing Molecular Links Between Polycystic Ovary Syndrome and Breast Cancer

Khushi Goley

Delhi Technological University, New Delhi, India

Asmita Das*

Delhi Technological University, New Delhi, India

Abstract

Breast cancer becomes the most frequent and widespread cancer impacting women globally. Frequently, it is monitored that females diagnosed with the condition PCOS display a greater inclination towards the expansion of breast cancer. The mechanistic basis of this process remains unresolved. Despite this, extensive experimental findings depict an essential role of chronic unopposed estrogen exposure, hyperandrogenism, and hyperinsulinemia in modulating the growth of cells and their proliferation, and also serve a potent role acting as a tumor suppressor in numerous cancers, which also involve breast cancer. Hyperandrogenism stimulates breast epithelial cell proliferation, DNA replication errors, Tumor initiation, and hyperinsulinemia, which exhibit anti-proliferative action and activate pathways like mTOR, PI3K, AKT, and cyclin regulation. The current research broadcasts an overlapping link between PCOS and breast cancer, shared molecular and genetic pathways, and how they may be disrupted due to PCOS. In addition, we postulate a novel mechanism and predict the outcomes of drugs for cancer linked with PCOS, which potentially contribute to the emergence of a novel therapeutic strategy.

Index Terms

PCOS, Breast Cancer, miRNA Interaction, Transcription Factor, Epigenetic Modification