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STEROIDOGENESIS PATHWAY AND BREAST CANCER: EMPOWERING PERSONALIZED TREATMENT WITH A METABOLOMICS APPROACH

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ABSTRACT

The relationship between steroid hormones and breast cancer has been known for decades. Steroid hormones play an active role in cellular proliferation in this cancer type and show their mitogenic effects by binding to estrogen, progesterone, and androgen receptors. Reducing the concentrations of active hormones in the systemic circulation may be insufficient to prevent the progression of the cancer, as it will enable the selection of tumor/peripheral cells that synthesize active steroids from circulating steroid precursors. The intracrine capacity of breast tissues now also has become an emergent area of interest in metabolomic research.

With the development of the current omics technologies, we are able to define and quantify small metabolic differences with precision not only from body fluids but tissues which can be associated with clinicopathological factors in early-stage invasive breast cancer cases. As our understanding grows about the regional steroid metabolism in breast cancer tissues, metabolomic biomarkers will be used more and more to shape the best way of personalized treatment approach of this deadly disease.

Keywords: Steroid Hormone, Breast Cancer, Steroidogenesis Pathway