

## Clinical Application of Circulating Tumor DNA in Diagnosis of Breast Cancer

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### Abstract

**Introduction:** Breast cancer is the leading cause of death in women over the age of 25 worldwide. In spite of the advancements in diagnostic methods, Surgery and invasive sampling of breast tissue are the only definitive diagnostic processes among breast cancer patients. During tumor development, Tumor cells which undergo necrosis or apoptosis release circulation tumor DNA (ctDNA) into the blood. ctDNA molecules are short fragments with 130-200 base pair (bp) carrying the features of genetic and epigenetic tumor tissues. ctDNA is a potential biomarker for detection, accurately monitoring tumor and treatment response. This review was conducted in English, using search engines Pubmed, Medline/Ovid, Scopus, Science Direct, ProQuest, and Web of Science and search terms including "Diagnosis or detection of breast cancer", "circulating cell free DNA" and "circulating tumor DNA".

**Conclusions:** In this review, we discussed the biological features and clinical applications of circulating tumor DNA in patients with breast cancer.