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Therapeutic Potential of Terpene Nanoemulsions in Targeting Breast Cancer: A Multi-Model Approach Toward Therapeutic Strategies

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KEYWORDS	ABSTRACT
Cytokines; Gene Expression; Nanoemulsion; Phytochemicals; Terpenes	The characteristics of phytochemicals have undergone extensive research in the medical and pharmaceutical sectors due to their extensive usage. To enhance cancer diagnostic and treatment criteria, novel bioactive compounds with increased efficacy are always needed. The study's main objective was to investigate the therapeutic potential of isolated terpene phytochemicals and terpene-based nanoemulsions against BRCA1, TPX2, P53 and WWP1 gene expression in cancer and breast cancer indicators. After being extracted from Catharanthus roseus, terpene chemicals were subjected to computational docking study. Using molecular docking, ADMET analysis, and dynamic simulation techniques, the found terpene compound's binding capability and inhibitory effect to target breast cancer receptors such as progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) were evaluated. The findings showing the terpene from the Catharanthus roseus plant has potential benefits to prevent breast cancer inflammatory biomarkers, lower the amount of oxidative stress enzymes, and aid in downregulating the expression of genes involved in cancer proliferation are all supported by these data.
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