Nanomedicine for breast cancer: The current approach to meet the therapeutic demand

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Abstract: Breast cancer is the second most common cancer which affected over 2 million women in 2018. In India 21.5% of 326,000 cancer cases in women are breast cancers. With new challenges coming up to tackle to the disease, nanotechnology has shown a promising potential to improve therapeutic strategies against breast cancer. Nanoparticles delivery has been demonstrated to promise high loading capacity, less toxicity, and stability of the drugs or biomolecules in contrast to traditional chemotherapeutic drugs. The introduction of organic NPs like micelles, liposomes, polymers and denrimex along with inorganic gold nanoparticles, SPIO Nano particles and quantum dots are some exciting approaches for novel therapeutic intervention to lead the innovative breakthrough for one of the most challenging cancers.

From diagnosis to the treatment NPs can outstrip the classical approach of therapeutics. The latest important inclination in designing breast cancer nanomedicine, including passive and active cancer cell targeting, breast cancer stem cell targeting, tumor microenvironment-based nanotherapy and combination nanotherapy of drug resistant breast cancer. Researchers may get acumen from these strategies to design and develop nanomedicine that is more customized for breast cancer to accomplish additional augmentation in cancer specificity, anti-cancer effect, antimetastasis effect and drug resistance turnaround effect. This review article, will highlight the role of nanomedicine in breast cancer therapeutics and treatment modalities explored to date.

Keywords: Nanomedicine, Nanoparticles

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