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Abstract	:	<p>Since ancient times, essential oils (EOs) derived from aromatic plants have played a significant role in promoting human health. EOs are widely used in biomedical applications due to their medicinal properties. EOs and their constituents have been extensively studied for treating various health-related disorders, including cancer. Nonetheless, their biomedical applications are limited due to several drawbacks. Recent advances in nanotechnology offer the potential for utilising EO-loaded nanoparticles in the treatment of various diseases. In this aspect, chitosan (CS) appears as an exceptional encapsulating agent owing to its beneficial attributes. This review highlights the use of bioactive EOs and their constituents against breast cancer cells. Challenges associated with the use of EOs in biomedical applications are addressed. Essential information on the benefits of CS as an encapsulant, the advantages of nanoencapsulated EOs, and the cytotoxic actions of CS-based nanoencapsulated EOs against breast cancer cells is emphasised. Overall, the nanodelivery of bioactive EOs employing polymeric CS represents a promising avenue against breast cancer cells in preclinical studies.</p>