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Abstract	:	Recent advancements in medicinal chemistry have highlighted the potential of essential oils (EOs) due to their diverse bioactive constituents with anticancer properties. Despite their promising effects, the use of EOs as single treatments faces significant challenges, such as limited solubility and stability. To overcome these limitations, nanotechnology-based approaches have emerged as a viable solution. Nanocarriers can enhance drug delivery by optimizing the pharmacokinetics and pharmacodynamics of therapeutic agents, including EOs. Additionally, the combinatorial approach using multiple therapeutic agents is gaining recognition for its effectiveness in addressing drug-resistant cancer cells. Integrating EOs with conventional chemotherapeutic agents through nanotechnology offers a promising strategy to improve therapeutic outcomes. This review examines recent advances in nanotechnology for cancer therapy, focusing on the use of nanocarriers for the encapsulation and targeted delivery of EOs. It discusses the mechanisms behind the anticancer effects of EOs, including their antioxidant, anti-mutagenic, and anti-proliferative activities. Furthermore, the review explores how nanotechnology-based combination approaches can enhance therapeutic efficacy and address current challenges in cancer treatment.