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1042 – Molecules carried by nanoparticles with biological effects for the treatment of breast cancer: a systematic review

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Introduction: Breast cancer encompasses a group of diseases characterized by malignant neoplasms in the mammary glands. Currently, it is one of the most prevalent cancers both in Brazil and worldwide, remaining rare in young women, with its incidence increasing with age. With the development of nanotechnology, many efforts have been made to develop new treatment approaches involving drug-carrying nanoparticles, aiming for targeted delivery with minimal side effects.

Justification: This study aimed to conduct a systematic review of the literature to identify bioactive molecules encapsulated in liposomes or other nanocarriers with cytotoxic and antitumor properties applicable to the treatment of breast cancer.

Methodology: The methodology followed the PRISMA Statement guidelines, with structured searches using the PICOS acronym, considering studies published between 2022 and 2024 in the PubMed, Science Direct, Scopus, and Web of Science databases. After rigorous application of the inclusion and exclusion criteria, 12 studies were selected for analysis.

Results: The molecules studied included magnetic nanoparticles, hybrids, and targeted drugs, which demonstrated significant antitumor efficacy, selectivity for malignant cells, and lower systemic toxicity. Carrier nanoparticles stood out for their superior drug delivery to the target site.

Conclusion: Despite promising advances, methodological heterogeneity and the scarcity of clinical trials in humans still limit the translation of these findings into clinical practice.

Ethics: Public data – Literature review.

Keywords: breast neoplasms; nanoparticles; molecular targeted therapy; drug delivery systems.