

A review on current nanomaterials and their drug conjugate for targeted breast cancer treatment

ABSTRACT

Breast cancer is the most common malignancy worldwide, especially among women, with substantial after-treatment effects. The survival rates of breast cancer have decreased over the years even with the existence of various therapeutic strategies, specifically, chemotherapy. Clinical drugs administered for breast cancer appear to be non-targeting to specific cancer sites leading to severe side effects and potentially harming healthy cells instead of just killing cancer cells. This leads to the need for designing a targeted drug delivery system. Nanomaterials, both organic and inorganic, are potential drug nanocarriers with the ability of targeting, imaging and tracking. Various types of nanomaterials have been actively researched together with their drug conjugate. In this review, we focus on selected nanomaterials, namely solid-lipid, liposomal, polymeric, magnetic nanoparticles, quantum dots, and carbon nanotubes and their drug conjugates, for breast cancer studies. Their advantages, disadvantages and previously conducted studies were highlighted.

Keyword: Advantages; Breast cancer; Disadvantages; Nanomedicine; Therapeutic strategies