The Torch
Vol. 3 (21)

Making way for polymeric nanoparticles to treat cancer

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The traditional chemotherapeutic methods possess a lot of side effects, one of which is non-targeted drug delivery. The advancement in technology has aided in developing certain methods to combat these drawbacks. Polymeric nanomaterials are one of the breakthrough methods used for treating cancer. Their advantages include reducing side effects, increasing dosage, increasing bioavailability and delivering multiple drugs in one carrier. This smart technology paves a path for efficient ways to deliver drugs by using a naturally low pH environment. The drugs are released only at the targeted site. The combination of thermo-sensitive polymer vehicles and localised hyperthermia aids in releasing the drug at the targeted site. Ligands and aptamers transport these materials to cancerous cells and trigger intracellular delivery. These methods are better than the free drug delivery and the passive nanomaterials as they increase therapeutic effects, recovery, efficiency and efficacy in a number of cellular and animal models. Therefore, polymeric drug-loaded nanoparticles can be used as a therapeutic strategy to target cancer cells without damaging normal cells and tissues.

Keywords: Aptamer, Polymeric nanotechnology, Cancer, Drug, Chemotherapy, Ligand

Citation:
Syed Wasfi Fatma Abidi. Making way for polymeric nanoparticles to treat cancer. The Torch. 2022. 3(21). Available from: https://www.styvalley.com/pub/magazines/torch/read/making-way-for-polymeric-nanoparticles-to-treat-cancer.