Chapter VI
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FUTURE PERSPECTIVES

Among all types of cancer, breast cancer is one of the most complicated diseases. The increase in the incidence of cancer and significant high market value, various limitations in the conventional therapy, high cost, and high toxicity of present nanomedicine has thrown a severe challenge to all the researchers to design and develop an alternative, biocompatible, eco-friendly, and cost-effective nanomedicine in a greener way. However, these approaches are still in the early stages of development and have many theoretical and technical limitations, issues of dose-related toxicity and side effects are also needed to be addressed. The revolutionary developments of novel drugs and new drug delivery systems are urgently needed, and the in vitro models and in vivo pharmacokinetic profiles also need to be improved to enhance the chitosan coated silver nanoparticles targeting for the cancer therapeutic effect. In this scenario, biosynthesized chitosan coated silver nanoparticles are likely to revolutionize the face of nanomedicine in the next decade towards cancer theranostics. High biocompatibility and biodegradability have increased the utility of biosynthesized silver nanoparticles in cancer therapy. Low cost of green synthesized AgNPs has decreased the overall production cost in the large industrial scale. Utilization of plant-based bioactive molecules (capping, anti-cancer, fluorescence) has ended the requirement of external drugs or fluorescent labeling agents. All the results taken together, this work highlights the drug delivery potential of chitosan coated silver nanoparticles. In future, various factors including potential long-term toxicity study, Biosafety, metabolic fate, immunogenicity, and pharmacokinetics and pharmacodynamics studies should be systematically examined in animal model before using these robust green nanoparticles in clinical trials.