

Preface

The aim of this book is to provide an overview of cancer therapies from conventional to nanomedicine based modern-day therapy. The initial part of the book discussed the conventional therapy and multiple drug resistance mechanisms. The conventional treatments have several limitations like nonspecific delivery, toxicity stability and multiple drug resistance by cancer cells. Among all, multiple drug resistance is a major concern for drug delivery and therapy for cancer. To overcome this, nanomedicine or drug delivery through small carrier known as nanoparticles based therapy came into existence. Owing to the small size and easy surface modification for targeting, suitability for carry both hydrophobic and hydrophilic drug, biocompatible and ease in clearance through the physiological system, nanomedicine has gained worldwide attention of researchers and pharmaceutical industries as an efficient carrier for targeted drug delivery and cancer therapy. The global market for nanomedicine was \$50.1 billion in 2011 and is expected to grow \$96.9 billion by the end of 2016 at the rate of annual growth of 14.1 % as per BCC report 2012. The tremendous potential of nanomedicine has inspired us to write this book to brief all the advancement made in this field in a concise form for an easy understanding. In the next part of the book, we have discussed the different types of nanoparticles and their targeting to the cancer cells followed by the role of nanomedicine in modern-day therapies such magnetic hyperthermia, photothermal therapy, photodynamic therapy and ultrasound based therapy and their potential and pitfalls. The book would provide an insight into recent advancement made in the field of cancer theranostic and monitoring and control of image-guided therapy. Finally, we have discussed the nanomedicine available in the market or clinical trial, challenges and future perspectives of the nanomedicine in effective diagnostics and therapy for cancer.

We hope that this small book would be helpful to graduate students and researchers working in the field of biophotonics, pharmaceuticals, applied science and engineering, and nanomedicine for targeted drug delivery and cancer therapy.

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