
Bioactive Natural Products for the Management of Cancer: from Bench to Bedside

Anil K. Sharma
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 Springer

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Preface

Natural biometabolites have been the mainstay of cancer chemotherapy, being a rich reservoir of candidate compounds for drug discovery. Recent efforts into the research and development of anticancer drugs derived from natural products have led to the identification of a variety of candidate molecules that inhibit cancer cell proliferation and metastasis via various mechanisms. With the advent of new technologies such as combinatorial chemistry and high-throughput screening, next-generation sequencing, and the ease of identifying abnormal genes, it is now possible to consider that natural products would sound the death knell for cancer. Moreover, natural products are likely to provide novel lead molecules which would be used as templates for restructuring them for potential anticancer drug candidates with enhanced biological properties. Moreover, nanomedicine-based natural products have recently shown promising therapeutic effects with better efficacy and target specificity against cancer countering drug resistance as well. Despite the increasing interest in natural product research, to our knowledge, still this area requires attention of the scientific community to explore the wide-scale mechanisms encompassing anticancer therapeutics with natural products being the lead compounds further redressing the growing problem of drug resistance against cancer. In order to fill these gaps and what kind of therapeutic roles natural products especially secondary metabolites play in the treatment and management of cancer, this book titled *Bioactive Natural Products for the Management of Cancer: From Bench to Bedside* has been able to successfully address the remarkable therapeutic potential of bioactive natural products against cancer.

The book has significant contributions in the form of book chapters by renowned authors as follows: Hala Gali-Muhtasib and his group highlighted the potential significance of anticancer alkaloids, underlying action mechanism, and clinical manifestations which were further supported by Batra and Sharma, expanding their studies to emerging alkaloids peeping into various factors and getting insight into the mechanism of action against cancer. Banerjee and his group shed light into the cancer etiology and therapeutic management by natural metabolites. Sharma et al. highlighted the potential anticancer therapeutic role of flavonoids especially flavones. Gajbhiye et al. emphasized the therapeutic properties of dietary polyphenols, flavonoids, terpenoids, and saponins in cancer chemoprevention. The same group further enlightened us with a vast immunogenic potential of natural products. Anshika Singh and S. Krishna further lead us to look into marine flora for their

immunomodulatory and therapeutic potential in the treatment of cancer. Bhattacharya and her group enlightened us by contributing a chapter on ligand-based designing of natural products paving a way for drug discovery of novel chemical entities. In another chapter, Nag and her group tried to address the mechanism of drug resistance in cancer and the potential role of nanomedicine-based natural products in countering the menace of drug resistance.

The book holds many unique flavors as follows:

1. Recent updates on natural metabolites and their therapeutics use against cancer
2. Unique and distinctive pathways and mechanistic insight into the mode of action of the metabolites
3. The use of these metabolites and nanoparticle-augmented adjuvant therapy to counter the ever-growing problem of drug resistance
4. Ligand-based drug designing of these natural metabolites to enhance their active potential and counter adverse side effects

Once again, my sincere thanks to all the contributing authors who worked as a team to let me complete this book. Special thanks to Dr. Bhavik Sawhney who was available all the time to impart his valuable inputs and assistance. Words of appreciation also go to Mr. Daniel Ignatius Jagadisan, the Production Team, and the Editor as well.

The book is dedicated to my parents and spouse who time and again kept inspiring me to accomplish this task and complete the said manuscript timely.

Ambala, Haryana, India

Anil K. Sharma

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About the Editor

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