Preface: Phytochemicals for Colorectal Cancer Therapy

Colorectal cancer (CRC) is one of the most lethal malignancies, representing the third most common cancer caused by genetic, environmental and poor dietary patterns. Even though new treatments like surgical techniques, chemotherapy, targeted therapy, immunotherapy and radiotherapy have led to better clinical results, the five-year relative survival rate in CRC is still dismal at only 64.7% and remains the second leading cause of death worldwide. The relevant novel CRC therapy strategies still need to be investigated and validated further. To eradicate and prevent the growth of CRC, innovative and safer drugs are an urgent requirement.

Naturally-derived compounds from plants, known as plant phytochemicals, can help to protect against malignant CRCs. Plants contain various phytochemicals and bioactive compounds such as alkaloids, flavonoids, resveratrol, luteolin, polysaccharides, alkaloids, glycosides, etc. Extensive studies on phytochemicals revealed that the phytochemicals derived from plant fruits, seeds, roots and leaves have chemo-preventive properties on CRC by their involvement in various signaling pathways. However, to overcome the problems currently experienced in the present therapies, new promising phytochemical anticancer agents with effective and lesser side effects have been developed to improve their efficacies in CRC patients.

The current issue consists of seven review articles. The first review focuses on the use of computational drug discovery methods to provide effective therapeutic agents against cancer. This review provides information on the development of novel and innovative methods in computational drug discovery and development. The second review deals with information about the anti-cancer properties exhibited by three naturally occurring alkaloids, namely, berberine, sanguinarine, and palmatine. This review discusses the effect of these alkaloids in CRC based on the results reported in various studies. This review also contains the future prospects of the alkaloids in colon cancer treatment. In the third review, the authors explained the importance of a predominant flavonoid, naringenin, in the prevention of CRC though their anti-cancer properties. This review also discusses the molecular structure source and biological properties of the naringenin in colon cancer including the molecular pathways involved in the colon cancer. The fourth review recapitulates the importance of pectin, plant polysaccharides in CRC therapy and briefly outlines the various signaling cascades regulated by pectin that contribute to its anticancer activity. In the fifth review, the authors briefly explain the pharmacological properties of citrus flavones and their associations with the inhibition of transcription factors and signaling pathways that mediate colon cancer’s progression. This review includes the impact of apoptotic evasion on colon cancer metastasis. It also summarizes the relationship between structural factors of citrus flavones and their anti-cancer activities and the anti-cancer mechanisms mediated by Luteolin and Apigenin in CRC. The sixth article reviews the literature published so far on a number of anti-cancer phytochemicals, including curcumin, resveratrol, quercetin, anthocyanin, genistein, EGCG, lycopene, lutein, indol-3-carbinol, ellagic acid, gallic acid, and rosmarinic acid. The seventh review provides information regarding the beneficial properties of the phytochemicals curcumin and resveratrol as anticancer agents. This review summarizes the advancements of nano-formulations for curcumin and resveratrol in colon cancer therapy.

It is my sincere belief that this volume highlights cutting-edge research concepts and new developments that can greatly help scientists and clinicians in the field of CRC and also help patients with colon cancer and their families.

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