

**Phytochemical-based Nano-formulation for Cancer Management**

**Guest Editors: Mohd. Saeed, Farukh Aqil**

**Aims and Scope:**

Cancer is the succeeding cause of morbidity and mortality around the globe. Approximately 90.5 million population was effected worldwide in 2015, and as of 2020 data almost 18 million new cases are emerging annually with a death rate of more than 15.7%. Based on an estimate by American Cancer Society, approximately 606,520 deaths are estimated in 2021 only in United States.

Currently, combination chemotherapies with taxane-platinum are the first- or second-line therapy used for the treatment of various cancer. Despite their efficacy, the clinical response of cancer to taxane-platinum therapy is marginal and temporary. This is primarily due to the development of drug resistance and metastasis. Despite two decades of chemotherapy of advanced cancers, the survival benefit remains modest. The drug efficacy is challenged by oral bioavailability issues despite high doses and high doses are either not translatable or exhibit dose-related toxicity and the development of chemoresistance.

In recent years, it has been thought that new strategies be developed for more effective treatment of cancer using simple and effective interventions. Since, plant derived compounds have historically led to some of the most useful cancer drugs (e.g. paclitaxel, vincristine, etoposide and teniposide etc.), at the present time, the researchers are focusing to find novel naturally occurring anticancer agents. These agents prevent carcinogenesis by various molecular mechanism including thier substantial antioxidative and anti-inflammatory activities. However, most of the phytochemicals. However, the majority of these naturally-occurring compounds need to be administered at high doses due to limited oral bioavailability.

Several nano delivery systems including solid-lipid nanoparticles and liposomes have been used in cancer management. Among these, liposomal delivery has advanced the most, with some chemo drugs [e.g., doxorubicin (DoxiIR)] have made to the clinics, while few others (cis- and oxaliplatin, PAC) are in Phase I/II clinical trials. however, many such approaches have not advanced to clinical translatability due to known issues with nano formulations such as opsonization, change of pharmacokinetics in multiple-dosing regimen, issues of biocompatibility, instability *in vivo*, costs, short blood circulation and lack of targetability.

Therefore, understanding and validating the biological processes and molecular mechanisms of phytochemicals, their delivery using some nanoformulation would provide a sound theoretical basis for the use of novel agents from plants in cancer prevention and treatment.

This Special Issue therefore welcomes new research articles and timely reviews on all aspects of natural products, their nano delivery, and roles in cancer management.

**Keywords:** Cancer Prevention, phytochemicals, nano formulations, drug delivery, dietary supplements, natural antioxidants, health benefits, cancer growth regulation, antiproliferative activity, anti-cancer treatments, cytotoxicity, integrative biomedicine

**Sub-topics:**

The subtopics to be covered within this issue include:

- Nano-formulations for inhibiting cancer progression
- Nano medicines as potential anticancer drugs
- Phytochemicals and their nano formulations
- Phytochemical-Based Nanomedicine
- Nano-based drug delivery systems
- Nanoparticles in cancer therapy

- Polyphenols for cancer prevention
- molecular mechanisms of phytochemicals

#### **Schedule:**

- Manuscript submission deadline: 30 October 2021
- Peer Review Due: 30 November 2021
- Revision Due: 30 December 2021
- Announcement of acceptance by the Guest Editors: 30 January 2022
- Final manuscripts due: 28 February 2022

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