

TENTATIVE OUTLINE

SPECIAL THEMATIC ISSUE FOR ANTI-CANCER AGENTS IN MEDICINAL CHEMISTRY

ROLE OF PHOTODYNAMIC THERAPY AND PHYTOCOMPOUNDS AS A NEW CANCER THERAPEUTIC STRATEGY

Special edition guest edited by Prof Heidi Abrahamse

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AIMS AND SCOPE:

Cancer is one of the oldest and common diseases globally and occur anywhere in the body. The technological advancements in medicine and treatments have significantly increased the lifespan however cancer has now become one of the biggest threats and natural enemies to humankind. Over the last decade, there has been a shift in the focus of cancer therapy from conventional cytotoxic drugs to therapies more specifically directed to cancer cells. These novel therapies include immunotherapy, targeted therapy, precision medicine etc. Each of these therapies developed with a goal of limiting destruction of normal tissues, while enhancing the tumor destruction. The aim of each cancer treatment option vary depending on the cancer type, size and stage. There are a number of alternative treatments to conventional therapies; however, there is a constant demand for new therapies to treat and prevent this life-threatening disease.

The greatest recent advancement in cancer therapy is the use of natural product based anticancer agents, which are far more selective and the use of new energy forms like lasers and ultrasound. Herbal medicines have been used since ancient times and are still used in developing countries for the primary healthcare needs. Medicinal plants have been used in folk medicines in Asian and African populations and many plants are consumed for their health benefits even in developed countries. Medical research turned its attention towards naturally-derived compounds as they have less toxic side effects compared to current treatments. Many drugs of plant origins are popular for their successful clinical trials. Their non-toxicity towards normal cells and cytotoxic effects on tumour cells put them in high demand. Many of the plant species investigated are from developing countries such as Africa and Asia, where herbal therapies are practiced and people relied upon medicinal plants for treatments. Photodynamic therapy (PDT) is a non-invasive and non-surgical method representing an attractive alternative for cancer treatment. Lasers can attack deeper cancers further inside the body and has the potential to kill all the cancer cells anywhere in the body. Photodynamic therapy involves the administration of a tumor cell localizing drug named a photosensitizer and, following its activation with a specific wavelength of light, in the presence of tissue oxygen, the photoactive sensitizer compound causes photochemical and photobiological changes in cells and may lead to direct cancer cell death. Due to this chemico-biological action, PDT has progressively gained recognition as a potential complementary cancer treatment.

Several preclinical and clinical trials suggest that the use of PDT in combination with other well established or with newly developed treatments may be of benefit as compared to the individual treatments. The currently available cancer prevention approaches have the potential to reduce a large proportion of the cancer burden. However, the newer approaches will help eradicate the burden of cancer more effectively and fully in the population as many factors like oxidative stress or nutrition play key roles in the pathogenesis of cancer. This thematic issue will focus on the use of plant derived agents and photodynamic therapy in cancer treatment as a new preventive and therapeutic approach, which discusses the growing knowledge in alternative and complementary cancer treatments.

KEYWORDS: Cancer; Cancer therapy; Phytocompounds; Photodynamic therapy; Cell death mechanisms

SUBTOPICS:

The thematic issue welcomes the basic science and clinical research reviews on the following potential topics:

- Cancer, incidence, risk factors and existing treatments
- Indigenous or folk medicine and plant based cancer treatments
- Phytocompounds in cancer therapies
- Novel photodynamic therapy of cancer
- Photodynamic therapy and cell death mechanisms

SCHEDULE:

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