Anti-Cancer Agents in Medicinal Chemistry

A review of chemotherapy and photodynamic therapy for lung cancer treatment

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Abstract

Cancer is among the leading causes of mortality and morbidity worldwide. Among the different types of cancers, lung cancer is the considered to be the leading cause of death related to cancer and the most commonly diagnosed form of such disease. Chemotherapy remains a dominant treatment modality for many types of cancers at different stages. However, in many cases cancer cells develop drug resistance and become non-response to chemotherapy; thus necessitating the exploration of alternative and /or complementary treatment modalities. Photodynamic Therapy (PDT) has emerged as an effective treatment modality for various malignant neoplasia and tumors. In PDT, the photochemical interaction of light, Photosensitizer (PS) and molecular oxygen produces Reactive Oxygen Species (ROS) which induces cell death. Combination therapy by using PDT and chemotherapy can promote synergistic effect against this fatal disease with the elimination of drug resistance, and enhancement the efficacy of cancer eradication. In this review, we give an overview of chemotherapeutic modalities, PDT and the different types of drugs associated with each therapy. Furthermore, we also explored the combined use of chemotherapy and PDT in the course of lung cancer treatment and how this approach could be the last resort for thousands of patients that have been diagnosed by this fatal disease.