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A Comprehensive Study on Synthesis of Coumarins and Coumarin Related Compounds in Pharmacotherapy of Cancer

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Abstract: *Cancer is one of the most common causes of disease-related deaths worldwide. Despite the discovery of many chemotherapeutic drugs that inhibit uncontrolled cell division processes for the treatment of various cancers, serious side effects of these drugs are a crucial disadvantage. In recent years, researchers have focused on the anticancer activity coumarins, due to their high biological activity and low toxicity. Coumarins are commonly used in the treatment of prostate cancer, renal cell carcinoma and leukemia, and they also have the ability to counteract the side effects caused by radiotherapy. In this review, a compilation of various research reports on coumarins with anticancer activity and investigation and a review of structure-activity relationship studies on coumarin core are presented. Determination of important structural features around the coumarin core may help researchers to design and develop new analogues with a strong anticancer effect and reduce the potential side effects of existing therapeutics.*

The structural motif of coumarins is related with various biological activities and pharmacological properties. Both natural coumarin extracted from various plants or a new coumarin derivative synthesized by modification of the basic structure of coumarin, in vitro experiments showed that coumarins are a promising class of anti-tumor agents with high selectivity. Cancer is a complex and multifaceted group of diseases characterized by the uncontrolled and abnormal growth of cells in the body. This review focuses on the anticancer mechanism of various coumarins synthesized and isolated in more than a decade. Isopentenyloxycoumarins inhibit angiogenesis by reducing CCl2 chemokine levels..

Keywords: Benzopyrone; Coumarin; Cancer; Drug Discovery; Natural Product..

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