

Cinnamon in Skin Cancer

CHAPTER 34

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Abstract

This review has thoroughly overviewed the related facts and figures about coumarins and its derivatives, especially in terms of biological and pharmaceutical properties including anti-microbial, anti-viral, anti-diabetic, anticoagulant, estrogenic, dermal photosensitizing, vasodilator, molluscicidal, antihelminthic, sedative and hypnotic, analgesic, hypothermic, anti-cancer activity, anti-oxidant, anti-parasitic, antihelminthic, anti-proliferative, anti-convulsant, anti-inflammatory, and anti-hypertensive activities. The pharmaceutical impact of coumarins on public health is a complex phenomenon, with several questions in relation to safety during medical therapies and consumption through diet. The present review focuses on coumarin clinical studies in the treatment of various chronic diseases such as cancer, diabetes, depression, Alzheimer's, Parkinson's and HIV. However, further research and review are necessary to broaden the therapeutic effectiveness of coumarin in patients suffering from such ailments. Responses to coumarin have been reported for patients suffering from malignant melanoma, metastatic renal carcinoma and, recently, advanced prostate cancer. These data together with some experimental evidence for antiprostatic effect prompted us to study the activity of coumarin in various prostate tumour models and evaluate the endocrine properties of this drug. In rats no antiandrogenic activity was found. The growth of Noble Nb-R prostate tumours of the rat was strongly inhibited by coumarin (40 mg/kg; administered three times per week), whereas the hormonally more sensitive Dunning R3327-G rat prostate carcinoma did not respond to coumarin (40 mg) even when the drug was administered daily. Coumarin was also shown to possess antimetastatic activity in a Dunning R3327-MatLu tumour model. In this model small pieces of the hormone-independent tumour were implanted into the ear of the animal and later resected to mimic the clinical situation where primary tumours have been removed. The number of lung metastases was reduced significantly by 40%-50% following the administration of coumarin (40 mg daily).

Keywords: Absorption, cinnamon, density function theory, distribution, excretion, HDAC8, metabolism, toxicity prediction, molecular docking, synthetic accessibility