The anti-cancer charm of flavonoids: a cup-of-tea will do!

Amin A¹, Buratovich M.

Author information

¹Biology Department, College of Science, UAE University, UAE. a.amin@uaeu.ac.ae

Abstract

Hormone-dependent cancers of the breast, prostate and colon have, in the past decade, become the leading causes of morbidity and mortality. Billions of dollars have been, and still are being spent to study cancers like these, and, in the past three decades, thanks to work by thousands of dedicated scientists, tremendous advancements in the understanding and treatment of cancer have been made. Nevertheless, as there is no sure-fire cure for a variety of cancers to date, natural protection against cancer has been receiving a great deal of attention lately not only from cancer patients but, surprisingly, from physicians as well. Phytoestrogens, plant-derived secondary metabolites, are diphenolic substances with structural similarity to naturally-occurring human steroid hormones. Phytoestrogens are normally divided into three main classes: flavonoids, coumestans and lignans. Flavonoids are found in almost all plant families in the leaves, stems, roots, flowers and seeds of plants and are among the most popular anti-cancer candidates. Flavonoidic derivatives have a wide range of biological actions such as antibacterial, antiviral, anti-inflammatory, anticancer, and anti-allergic activities. Some of these benefits are explained by the potent antioxidant effects of flavonoids, which include metal chelation and free-radical scavenging activities. Patent applications regarding flavonoids range from protocols for extraction and purification from natural resources and the establishment of various biological activities for these extracts to novel methods for the production and isolation of flavonoids with known biological activities. This review will bring the reader up to date on the current knowledge and research available in the field of flavonoids and hormone-dependent cancers, and many of the submitted patents that exploit flavonoids.