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Nutraceuticals: the link between lifestyle and medicine
A Review

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Abstract: Numerous studies have reported positive associations between certain biologically active compounds, with pharmacological properties, such as nutraceuticals, contained in some foods and various pathologies. The term "nutraceutical" currently varies from country to country, referring to a number of valuable molecules, derived from organic sources (plants) or foods such as polyphenols, essential amino acids, antioxidants, soluble fiber, polyunsaturated fatty acids (PUFA), prebiotics, which act at the cellular level, in combating oxidative stress and inflammatory processes and / or in altering the expression of some genes. The discovery of the many benefits attributed to these products and the ever-changing lifestyle have contributed to increasing consumer confidence in nutraceutical and functional foods around the world, and there is a growing interest in improving the quality of life and adopting a healthy lifestyle. to prevent or reduce the risk of disease. Based on these considerations, this paper aims to review some scientific evidence obtained from in vitro / in vivo studies, which supports the beneficial effects of some nutraceuticals and their medical implications in various pathologies.

Introduction

The relationship between food and medicine has been traced back to antiquity in countries like Greece and China and sends us back in time, 3000 years ago, to the time of the "father of medicine", Hippocrates, who stated "let your medicine be food and let medicine be your food", a concept preserved to this day. In recent years, increasing the body's endurance and prolonging its lifespan have become major priorities for relevant fora around the world. Society's interest in the quality of food and how it influences the quality of life, but also in the development of modern technologies, such as immobilization, nanotechnology and / or encapsulation, to obtain compounds such as nutraceuticals, is a major priority for both food and pharmaceutical field. The term nutraceutical product refers to any biologically active substance or substance isolated from the matrix of a food product, in a concentrated form, perfectly compatible with the human body and which positively supports its physiological and metabolic functions, but which is not recommended. to be consumed as a food to replace meals or diet. Although many benefits of these products are currently known due to their mechanisms of action, such as antioxidant and anti-inflammatory activity, there are still a number of key issues, such as bioavailability, degree of metabolism or dose used, which are not yet fully known and which raises a number of legislative issues regarding the regulation of their use on the market.

Therapeutic implications

Prevention and treatment of hypertension and cardiovascular disease

High blood pressure is the leading cause of 45% of heart attacks and 51% of strokes and is the key factor in causing over 9.4 million deaths worldwide. Experimental studies have found an association between the consumption of foods high in nutraceuticals (polyphenols, flavonoids, dietary fiber, etc.) and improved endothelial function in patients with coronary heart disease, decreased incidence of myocardial infarction, coronary heart disease and angina pectoris.

Anti-obesity effect

Obesity is caused by a dysfunction of the gene responsible for the synthesis of proteins in adipocytes. Studies have shown that the administration of anthocyanins to laboratory animals determines the regulation of the expression of these genes resulting in decreased body weight, regulation of hyperglycemia, hyperinsulinemia and decreased fatty acid levels and the concentration of triacylglycerol in the liver, regardless of food intake.

Anti-cancer and anti-angiogenic effect

Angiogenesis is the key to the development of different types of cancer, which is an important step in the transition of a tumor from a benign to a malignant state. In cancer prevention, antiangiogenesis is the process that prevents the formation of new blood vessels that supply oxygen to tumor cells. Several sources of flavonoids and anthocyanins, detected and extracted from various plant sources, have a high chemoprophylactic potential in the colon, esophagus, liver, prostate, adrenal glands, skin, breast, liver and prostate, by stopping the cell cycle, cell proliferation, slowing down the inflammatory process and triggering apoptotic mechanisms.

Conclusions

The idea of using products with a high content of biologically active compounds at the interface between food and medicine, called generic nutraceuticals, is mainly due to their action on various cellular structures, in the fight against oxidative stress and combating free radical accumulation.



Classification of products with nutraceutical effect