BENEFICAL EFFECTS OF POLYPHENOLS IN NEUROINFLAMMATION AND RELATED DISEASES

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The increase in the average lifespan and the consequent proportional growth of the elderly segment of society has furthered the interest in studying ageing processes.

Ageing may be considered a multifactorial process derived from the interaction between genetic and environmental factors including lifestyle. There is ample evidence in many species that the maximum age attainable (maximum lifespan potential, MLSP) is genetically determined and several mitochondrial DNA polymorphisms are associated with longevity.

Many studies have shown that most of the phenotypic characteristics observed in the aging process are the result of the occurrence, with age, of a low grade chronic pro-inflammatory status called "inflammaging", partially under genetic control. The term indicate that aging is accompanied by a low degree of chronic inflammatory, an up-regulation of inflammatory response and that inflammatory changes are common to many age-related diseases. Therefore, the theory of oxidation-inflammation was proposed as the main cause of aging. Accordingly, the chronic oxidative stress that appears with age affects all cells and especially those of the regulatory systems, such as the nervous, endocrine, and immune systems and the communication between them. This prevents an adequate homeostasis and, therefore, the preservation of health. It was also proposed that the immune system plays a key role in the aging process, specifically in the rate of aging, since there is a relationship between the redox state and functional capacity of immune cells and longevity of individuals. Moreover, the role of the immune system in senescence could be of universal application. A confirmation of the central role of the immune system in oxi-inflamm-aging is that the administration of adequate amounts of antioxidants in the diet improves immune function, decreases their oxidative stress, and consequently increases longevity.

The present paper was aimed to understand the molecular mechanisms underlying beneficial effects of polyphenols on neuroinflammation and related diseases.