



ABSTRACT

## Nutrition and inflammaging : unveiling the impact of diet on healthy aging

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Aging is a declining process which leads to a poorer state of human health. The process involved immune system, known as immunosenescence, which is a multifactorial and dynamic process, involving both innate and acquired immunity. It is characterized by a progressive reduction in the ability to trigger immune responses against infections and vaccinations and lead to inflammaging. Immunosenescence plays a critical role in most chronic diseases in older people, therefore, attempts are made to slow down or reverse the process.

Inflammaging is defined as a chronic, sterile-low-grade inflammation with concurrently develop with age. It is macrophage centered, involves several tissues and organs, including the gut microbiota. It is characterized by a complex balance between pro- and anti-inflammatory responses and predicts susceptibility to age-related pathologies such as cancer, cardiovascular disease and neurodegenerative diseases. Recent theory considered inflammaging as an adaptation/remodeling as a result of lifelong immunological response to environmental exposure. It may be an adaptive process because it can trigger an anti-inflammatory response to counteract the age-related pro-inflammatory environment.

Chronic nutrients excess, especially a high-fat diet causes a stress for several tissues, which leads to chronic activation of specific inflammatory paths. These responses are higher in adipocytes and hepatocytes. Several nutrition-related interventions were proposed to modulate inflammation in ageing process, ranging from calorie restriction, timing food restriction, food-based treatments, gut microbiota modification and vitamin-based therapies. However, most of the intervention have not reached to conclusions as modalities to balance inflammaging and anti-inflammaging. Future clinical studies are required to confirm the effective therapy, both as single or multimodalities therapy, to modulate inflammaging and concomitant health outcomes.

**Keywords:** nutrition, aging, inflammation

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