


Chapter 2

Anti-Inflammatory Food: The Influence of an Anti- Inflammatory Diet in Treating Inflammatory Diseases

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ABSTRACT

Inflammation often linked to development of chronic diseases. Besides modern and complementary medicine, food intake plays a huge role in the maintenance of the physiological conditions of the body by providing the optimum nutrition which promotes tissue healing and tissue repair in the body. Among the diverse choice of foods, anti-inflammatory food exhibits some anti-inflammatory properties which improves the healing of the tissues from inflammatory conditions. Dietary intake of anti-inflammatory food comprises plant-based food which is rich in antioxidants, healthy fats and phytochemicals such as flavonoids, carotenoid, and polyphenols like isoflavone. Therefore, this chapter introduces the basis of inflammation in chronic diseases, followed by discussion of the development of inflammatory diseases. Then, the role of anti-inflammatory food as a medicine to cure the inflammatory diseases is discussed. This chapter aims to provide new insights and trending information of anti-inflammatory foods in healthcare

INTRODUCTION

Inflammation is one of the defense mechanisms alarmed by the human body to reduce infection by the foreign substance. Inflammation prepares your body to get

DOI: 10.4018/979-8-3373-1439-6.ch002

rid of any inflammatory agents including pathogens, allergen and foreign particulate materials. However, inflammation which acts as a protective mechanism often gets overactivated at times resulting from the various factors including genetics, lifestyle, diet, infections and drugs hence may end up causing continuous inflammatory conditions in patients. Continuous chronic conditions lead to inflammatory diseases which include asthma, diabetes mellitus type 1, myocardial infarction, inflammatory bowel disease, Crohn's disease and many more (Guerrero et al., 2025). One of the most underlying cause of inflammatory diseases is the diet, which involves intake of highly processed food such as fast food and unhealthy snacks which is high in inflammatory agents include salts and food chemicals that increases the risk of inflammatory diseases (Mazzucca et al., 2021). In development of any disease, when the role of protective element becomes overboard, it causes overreaction of the protective mechanism. Similarly, the understanding between inflammation and inflammatory diseases reveals that inflammatory diseases arises following the excessive magnitude or dysregulation of the inflammatory responses in various systems.

Inflammation is often triggered by the stimuli from infection or injury. In response to inflammation, the injured tissue releases many vascular mediators such as Tumor Necrosis Factor (TNF), IL 3, and chemotaxis which acts on vasodilation and accumulation of inflammatory cells including neutrophils, macrophages, basophil and eosinophils to the injury site, as these steps forms the pathway in the inflammatory process. The release of inflammatory mediators determines the cardinal signs of inflammation like redness, heat, swelling, pain and loss of tissue function, inducing the tissue to undergo a tissue repair after a temporary tissue damage. The inflammatory diseases begin with unresolved acute inflammation and turns into chronic inflammation. Continuous tissue damage leads to necrosis of the affected tissue such as liver, nervous tissue, kidney, skin and tissues of other organs.

DEVELOPMENT OF INFLAMMATORY DISEASES

The health of the tissues or the organs are regulated by the homeostasis system of the nervous and endocrine systems. Homeostatic control system is responsible to adjust the functional states of the tissues within the controlled condition. During a disruption occurring to the controlled condition, the physiological system in the body will try to reverse the condition closer to the controlled condition. Similarly, during inflammation, the physiological system will operate in such a way to damage the injured tissue and replace the damaged tissue with new tissue. Continuous or unresolved inflammation often occurs when the inflammatory agent still remained in the injury site due to difficulty from being removed, resulting in chronic inflammation. Chronic human diseases often develop due to unresolved chronic inflam-

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