Chapter 9
Food as Medicine in Nutrition and Microbiology Perspectives

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ABSTRACT

The concept of "food as medicine" is rapidly gaining momentum, bridging traditional wisdom with cutting-edge scientific research. This chapter explores the historical evolution of food's role in health, from its cultural roots in ancient medicinal practices to its disease prevention and treatment in the 21st-century integration into modern healthcare systems. Defining this paradigm's scope and contemporary relevance, the discussion establishes a foundation for understanding how food contributes to medicine. The science of nutritional therapeutics highlights bioactive compounds such as flavonoids, probiotics, and omega-3 fatty acids, which influence cellular and molecular pathways to deliver therapeutic benefits. Mechanisms like anti-inflammatory responses, antioxidant activity, and immune modulation are explored, focusing on functional foods and nutraceuticals. The gut-brain axis is a pivotal area of study, shedding light on the impact of diet on mental health and cognitive function.

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INTRODUCTION

Humans, throughout history, have migrated to find food, water, shelter, and thus, formed settlements close to sources which provide a continuous supply of water or food. Some populations, however, remained living in forests and other remote areas, and so began tribal groups, while others transitioned into structured communities. Humans learned over time to predict which plants were edible and which were dangerous plants to avoid, which they then taught to their generations. Forest produce also contributed to human survival and shaping of dietary habits which were primarily affected by the environment around (Goswami & Ram, 2017).

Thus, thousands of plant species, including trees, shrubs, herbs and aquatic plants, have become a common element in the human food consumption regime. These plants have been used in the process of preparing food and even as medicine. Traditional diets have incorporated various plant parts and these include leaves, stems, roots, flowers, fruits and these are prepared as decoctions, teas, curries and other food forms (Eussen et al., 2011; Goswami & Ram, 2017).

Aspirin is a well-known example where it has been originally obtained from white willow bark. Cyclosporines used as immunosuppressants, anthracycline antibiotics and the statins which help control cholesterol levels are other notable medications. In traditional terms, pharmaceuticals have been used to treat disease or relieve symptoms while nutrition has had a preventative role where adequate amounts of nutrients are supplied to booster overall health (Eussen et al., 2011).

Food and medicine are in close connection and their relationship extends way back to ancient times as recognized in different cultures and traditional societies. This idea is supported by Hippocrates' famous proclamations, "Let food be thy medicine and medicine thy food", as well as large Ayurvedic emphasis on food and health. While acknowledged, modern academic research has generally considered food and medicine as separate fields. (Heinrich, 2015; Jennings et al., 2015).

A good key study by Etkin and Ross (1982) on one group of the Hausa people in Nigeria has shown that many of the plants are used both nutritionally and therapeutically. They emphasized how cultural context and pharmacological properties must have contributed to the determination of plants for their use as health providers. Other researchers have also investigated the dual function of food and medicine in other cultural settings, specifically in other populations' diets which they have adapted for medicinal reasons (Jennings et al., 2015). Studies on Asian communities show the use of traditional foods, such as spices and vegetables, for their medicinal properties. Taste was a determining factor, especially in bitter vegetables which are believed to help control diabetes, since the bitter taste could help the consumers counteract the sweetness (Jennings et al., 2015; Waldstein, 2018).