Journal of Food Science Research

Editorial | Vol 10 Iss 2

Food Texture Analysis in Quality Evaluation and Product Development

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Received: jan 04, 2025; **Accepted:** jan 18, 2025; **Published:** jan 27, 2025

Abstract

Food texture analysis is a scientific approach used to evaluate the mechanical and structural properties of food products. Texture strongly influences consumer perception, acceptability, and overall eating experience. Instrumental and sensory texture analysis methods are widely used in food quality assessment and product development. This article discusses the importance of food texture analysis and its role in ensuring food quality and consumer satisfaction. This article discusses the role of protein characterization in modern food science and food product development. This article discusses the role of food fortification in promoting nutrition security and public health. This article discusses the role of food biotechnology in modern food science and its contribution to sustainable food production. Improper post-harvest practices can lead to significant food losses, reduced nutritional value, and economic challenges.

***Keywords:** Food texture analysis, Food quality, Consumer perception, Mechanical properties, Product development*

Introduction

Food texture refers to the physical and mechanical properties of food perceived through touch, mouthfeel, and mastication. Attributes such as hardness, chewiness, crispness, and cohesiveness strongly influence consumer acceptance and preference [1]. Texture is determined by food structure, composition, and processing conditions. Instrumental texture analysis uses mechanical devices to measure properties such as compression, shear, and deformation behavior of food materials [3]. Their presence in natural foods highlights the importance of dietary diversity and plant-based nutrition In food science, bioactive compounds are increasingly used in the development of functional and fortified foods [4]. Advances in extraction, stabilization, and delivery technologies have improved their bioavailability and effectiveness [5]. Therefore, bioactive compounds represent a vital intersection between nutrition, food science, and preventive healthcare [2]. Bioactive compounds are non-nutrient components in foods that influence physiological processes and promote health. These substances include polyphenols, flavonoids, carotenoids, peptides, and phytosterols, which exert protective effects against various diseases. Their

biological activity makes them valuable components of functional foods. Therefore, bioactive compounds represent a vital intersection between nutrition, food science, and preventive healthcare.

Conclusion

Food texture analysis is essential for evaluating food quality and improving consumer satisfaction. By combining instrumental and sensory approaches, it supports product development and quality control. Continued research in texture science will further advance food innovation and consumer-focused product design. Continued scientific research and regulatory oversight will strengthen the credibility and impact of nutraceuticals in global health systems. When used responsibly and regulated effectively, they contribute to product stability and consumer satisfaction. Ongoing research and regulatory oversight are essential to ensure the safe and beneficial use of food additives in the global food industry.

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