

Food Science's Role in Cardiovascular Disease Prevention and Management

Dr. USHAA ESWARAN¹, PRADEEPA K², R.THİYAGARAJAN³, K RAMYA SREE⁴, UMA MAHESWARI P⁵

Mahalakshmi Tech Campus, Chennai, Chrompet-600044

*Corresponding Author

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Abstract:

Food science is the study of the type of food, as well as its harvesting, processing, distribution, storage, and processing, using basic science and engineering. It is very important to meet the needs of the world's growing population. The main purpose of food science is to have a basic understanding of the nature and qualities of food in order to improve the efficiency of existing food production activities. This article serves as an introduction to food science.

Keywords: Green revolution, food production and modern instruments.

INTRODUCTION

Food is an essential human requirement. A nation's health and well-being are dependent on the availability of high-quality food at a reasonable price. More and more healthy food is required for the world's population. As the public's reliance on ready-to-eat food has grown, so has processors' commitment to quality and safety. Significant progress has been achieved in the field of food processing, processing, storage, and distribution in recent years. Food production in many nations has grown as a result of improved production tactics and the implementation of the Green Revolution [1]. Food science is the application of natural scientific concepts and engineering principles to the manufacture and preservation of safe, plentiful, and high-quality food. It employs applied science in food research and how to make food that is safe, wholesome, nutritious, and healthy. Every product that is utilised has been influenced by food science. It offers frozen meals, canned foods, microwave foods, snacks, and a wide range of foods. Food science is assisting in the feeding of our almost 7 billion increasing populations! It has evolved in order to make food the foundation of a healthy society, to assist communities in overcoming hunger and disease, and to increase safety, accessibility, and food security.

Food Science Components

Food science is an interdisciplinary field that incorporates both pure and applied science. All of these disciplines are engaged, including chemistry, microbiology, physics, nutrition, and engineering. Agricultural science, neurology, molecular thermodynamics, nanotechnology, and economics are also included in food science [2]. Food science looks at the many types of food and focuses on the technical elements of food. It covers every element of nutrition. As a result, food science encompasses a wide range of sub-studies, including [3,4]:

□ The study of the chemical processes and interactions of all biological and non-biological food components is known as food chemistry. It looks for chemical

reactions in food molecules.

□ Food engineering refers to the industrial procedures that are utilized to manufacture food. It solves challenges in the building of food production and processing systems by applying engineering techniques.

□ The application of food science to the selection, storage, preparation, packaging, distribution, and consumption of safe food is known as food technology.

□ The study of the impact that bacteria or organisms can have on the quality and safety of food items is known as food microbiology. It also covers studies on the environmental impact of food waste and production.

□ Food packaging examines how food is packaged after processing in order to retain nutrients.

□ Food processing, such as cooking and preparation, is concerned with preserving the safety and nutritional value of food structures while allowing for delivery to customers.

□ Food security entails understanding the causes and prevention of food deterioration.

□ Molecular gastronomy is a branch of food science that studies the physiological and chemical changes that occur during cooking. It investigates the physiological changes that occur during the preparation of food for human consumption.

Food quality is a quality indicator of consumer-acceptable food quality. When it comes to food, quality is a nebulous concept. Quality control also ensures that the product fulfils the criteria, ensuring that the consumer receives exactly what they need.

Food Science Devices

Food scientists have a plethora of good instruments at their disposal for researching foods and drinks (e.g. wine, tea, fruit juices). With the advancement of contemporary equipment, an increasing number of tools are being utilised in food science, including the following:

MRI (Magnetic Resonance Imaging): There is no method that can match to magnetic resonance imaging for assessing the dynamic structural changes in food during digestion and storage (MRI). Gradient-echo imaging, functional imaging, active plant-based

thinking, flow imaging, and rheology are all dietary imaging strategies used in MRI [6].

Microscopy: Understanding the microscopic structure of meals is essential for predicting and controlling their behaviour. Light and electron microscopy have been widely employed to analyse a wide range of immature and processed objects. Because of the high expense of equipment, the use of non-invasive imaging techniques such as magnetic resonance imaging (MRI) is severely limited.

The atomic force microscope (AFM) is a type of scanning probe microscopy. The recent arrival of confocal scanning laser microscopy is a significant advancement for microscopes. Allows for the monitoring of specific amounts even in the thickest samples [7,8].

Spectroscopy: Depending on how various atoms and molecules interact with electromagnetic waves, there are many spectroscopic approaches. Food science, medicine, chemistry, and botany all employ mass spectrometry. Raman spectroscopy examines the light released by food sources when they are irradiated by a laser source. It is a useful tool in food science for translating biomaterial, thermal, and rheological approaches. Researchers can use this tool as a complementary measure in the microstructure of food [9].

Expert Plan: This is an effective information support tool for strategic decision-making and management strategies in a variety of scientific and technological knowledge fields [10]. Internet resources and computer-based surveys are increasingly being utilised to replicate aspects of advanced consumer research methodologies.

Benefits and Limitations

Government financial assistance for the food industry demonstrates the importance of food in our culture. The current availability, abundance, quality, and security of food in many regions of the globe are primarily attributable to technical advances in food production, which are supported by food science education. Food science is the foundation for current value and good food quality [11]. Agricultural technology has mostly benefited large farmers and is unsuitable for smallholder farmers. Smallholder farmers may require technology that can be integrated into the planting process. Manufacturers and customers alike may be unaware of what makes healthful food in some circumstances.

Food marketing and distribution were a colossal failure [12]. The demands of emerging countries are not the same as those of industrialised countries. Foreign solutions placed impartially in emerging countries will not fix their issues. In their food selections, consumers

are more concerned with environmental, social, and ethical issues. It's tough to decide what to eat for supper every night because food is tied to social, cultural, and economic considerations. Obesity is caused by excessive eating of low-cost meals (at home or in restaurants) combined with a high calorie intake [13]. It is a significant issue for food scientists to assure customers that food items are not only safe but also beneficial to their health.

CONCLUSION

Food science is the study of food storage, selection, storage, and distribution. It is still a young and developing discipline. Food science will be called upon in the future to handle a variety of human concerns, including sustainability, nutritional security, longevity and health, and food security and protection. Because change is constant in food science, continuing research should be a priority for any food scientist who wishes to stay current. Conferences, seminars, symposia, webinars, online programmes, and short courses can provide a wide range of professional development possibilities [12]. Agriculture, nutrition, and food science groups must work together. Food science education should be addressed at all levels of society in order to instil healthy eating habits in people of all ages [14]. Many books on food science may be found at [15 - 25].

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