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Innovative Trends in Food Production of Europe

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Abstract

Food has been evolved in recent years as consumer demand for as they think food is not just to satisfy hunger but its directly impact their health. Scientists are trying to formulate novel food products by blending foods or by adding some additives to natural foods or byy using some technological methods. Some scientific methods like biotechnology and animal and plant breeding also can produce novel food products. There are some innovative methods which can be used to increase the shelflife of food products including edible packaging, coating and microencapsulation. Processing of agricultural raw material for food production makes the food industry one of the most important industry in European Union. Thus food industry has to adopt innovations in raw material and production methods to compete with other industries and fulfill the consumer demand. Food Innovations include scientific and technological procedures for food processing to make it more appealing for customers. Functional foods include probiotics and vegan products are examples of food innovations and now are trending in european union.

Key Words: *Food industry, Innovation, Functional food, Packaging, Vegan products*

Introduction

The food industry is one of the most important sectors in the European Union due to its high economic importance. In most countries, food consumption has peaked, and the European food market appears to be extremely saturated (Gracia and Albisu, 2001). In the European food system, this type of competitive climate leads to a constant search for new goods, procedures, and services (Gracia and Albisu, 2001), which enables industries to differentiate themselves from rivals and satisfy customer demands (Menrad, 2004). Institutional research and development operations, which are often thought to produce innovations, universities and research institutions are widely recognized to play a dominant role (Fearne et al., 2013; Acosta et al., 2011, 2015; Garcia-Alvarez-Coque et al., 2015). Transferring scientific and technical information to industries has therefore been the primary goal of innovation programs (Coenen and Moodysson, 2009; Arias-Aranda and Romerosa-Martinez, 2010; Acosta et al., 2011; Muscio and Nardone, 2012; Moodysson and Zukauskaite, 2014).

The processing of agricultural raw materials and the provision of food make the food industry one of the most significant sectors of the national economies of Italy and the European Union as a whole. As a result, several writers emphasized its importance in relation to employment and economic production (Menrad, 2004). The food business has historically been viewed as a field with low research intensity on innovation in literature (Christensen et al., 1996; Garcia Martinez and Briz, 2000). Nevertheless, innovations defined as new goods, procedures, or services are acknowledged as a crucial tool for businesses in the food sector to differentiate themselves from rivals and meet customer demands (Menrad, 2004).

Consumer demand in the food production sector has evolved significantly over the past ten years; in fact, consumers now more strongly think that food directly affects their health (Mollet and Rowland, 2002; Young, 2000). So now meals are designed to avoid nutrition-related disorders and to promote physical and mental well-being, rather than only to satisfy hunger and supply the required nutrients (Menrad, 2003; Robertfroid, 2000b).

Innovation in the food industry

Introduction of innovative foods and new scientific & technological methods in food processing are the two key examples of food business innovations in recent years. Innovations in the food sector are frequently focused on creating significant substitutes, adhering to dietary guidelines, or meeting laws governing food additives. They can concentrate on aspects of food technology, such as process engineering, product formulation, food attributes, or customer demands, and are often new consumer goods and services. Furthermore, to create food that meets the dietary, individual, and social demands of every community, they must integrate technical innovation with social and cultural innovation. Researchers consider functional food to be one of the most intriguing areas of study and invention among all the advancements offered in this business (Annunziata and Vecchio, 2011; Jones and Jew,

2007; Siro et al., 2008). The rising expense of healthcare, the constant rise in life expectancy, and older people's desire for a higher quality of life in their later years all contribute to their importance (Kotilainen et al., 2006; Robertfroid, 2000a, 2000b).

Functional foods

Fortified food products with unique constituents have beneficial physiological effects, a study on the connections between nutrition, sensory satisfaction, fortification, and physiological system modulation led to the first use of the term "functional food" in Japan in 1984 (Hardy, 2000; Kwak and Jukes, 2001). Functional meals have cholesterol-lowering products which reduce the risk of certain diseases, enhance the body's overall condition, and may even be used to treat certain illnesses (Mark-Herbert, 2004; Menrad, 2003; Side, 2006). Probiotics have recently taken the lead in the functional food industry in both Europe and Japan, with over 370 products introduced globally in 2005 (Ouwehand, 2007). The most researched and often utilized probiotics are bifidobacteria and lactic acid bacteria (LAB) (Kociubinski and Salminen, 2006). Probiotics are mostly sold in Scandinavia, the Netherlands, Switzerland, Croatia, and Estonia, with growing markets like Greece, France, and Spain, as recently noted by Makinen-Aakula (2006).

Technological process

Food processing has always made use of technology. Its use in the development of new functional foods has a long history of successfully controlling deficiencies in vitamins A and D, several B vitamins (thiamine, riboflavin, and niacin), iodine, and iron. Formulation and blending constitute a straightforward, affordable, and adaptable technology (Betoret et al., 2011). The scientific community, consumers, and food manufacturers have paid more attention to this category of food products in recent years due to the growing significance of dietary compounds and the associated health benefits, which presented an excellent opportunity to improve public health (Karaaslan et al., 2011; Kim et al., 2010). Additional options include biotechnology and animal breeding, which offer the potential to produce better food products (Laible, 2009; Matsushita et al., 2007; Zhu et al., 2008), as well as agriculture and livestock, which serve as the main source of the nutrients needed by humans (Zhao and Shewry, 2011).

Technologies are made to stop physiologically active substances from degrading. The two that are most passionately contested in scientific literature are edible films and coatings, which refer to any kind of material used to encase different foods in order to prolong the shelf life of the product that may be consumed with food (Pavlath and Orts, 2009); and microencapsulation, which involves enveloping small solid particles, liquid droplets, or gases in a coating based on the embedding effects of a polymeric matrix (Betoret et al., 2011). Vacuum impregnation is thought to be a practical method of introducing desired solutes into the porous structure of foods, changing their original composition. This has the high potential to carry active ingredients that can lower the risk of pathogen growth on the food surface and provide specific nutrients (Watanabe et al., 2011).

The goal of recent technology was to create customized functional meals. Given that dietary recommendations that are suitable for one person may not be suitable for another, nutrigenomics considers the relationship between food and a person's genome and the ensuing downstream impact on their phenotype (Ferguson et al., 2010). Although this cutting-edge technology is still in its infancy and many elements are still unclear, it has the potential to open a wide range of options in the field of functional foods (Penders et al., 2007; Ronteltap et al., 2007). Furthermore, there are currently only a few instances of clinical trials employing these technologies, so many problems need to be resolved before the genomic approach is accepted as a means of directing food development or nutritional advice (Betoret et al., 2011; Kaput and Dawson, 2007).

Vegan trend in Europe

Food companies embark on plant-based food-related sustainable innovation journeys that how these foods might eventually result in a socio-technical regime of sustainable food production and consumption (Geels et al., 2008). As evidenced by the gradually rising number of vegans and plant-based diet adherents, veganism is a modern and developing social movement that has recently expanded in Western industrialized countries (Strecker, 2015). A plant-based diet is being aggressively promoted by national health research agencies in several European nations to improve public health and slow down climate change (Appleby et al., 2011; Dyett et al., 2013). The output of animal feed has increase rapidly in recent decades, as seen by Italy, where the Mediterranean plant-based diet has long been the most popular diet. According to 2017 research by the Italian Society of Human Nutrition, government institutions and health groups ought to encourage Italians to adopt a vegetarian diet (Agnoli et al., 2017). In the meantime, Environmental policies are considered necessary to help Norwegian consumers make climate-friendly food choices because, in Norway, researchers have found that informing consumers about the health or climate benefits of eating less meat has had little effect (Austgulen et al., 2018).

According to a Danish survey consumers are clearly divided into those who have a good attitude and those who have a negative attitude toward plant-based diets. To boost the consumption of plant-based meals, researchers suggested that future consumer campaigns address concerns expressed by regular meat eaters such as the

preparation, taste, and skepticism regarding the low protein content of plant-based diets (Reipurth et al., 2019). In addition to having an influence on sustainable consumption practices (Büchs et al., 2015), the food business is also taking notice of the rising popularity of veganism and plant-based diets (Pojic et al., 2018).

Food industries have needed to be ready to swiftly provide new items in response to shifting consumer expectations (Traill and Meulenberg, 2002). As a result, businesses in the food industry have had to develop marketing skills in addition to scientific and R&D capabilities, and produce novel goods based on market research. Several policies within the European Union, such as the Common Agricultural Policy, impact food production and consumption. Furthermore, the entire food production system depends on farmers, merchants, consumers, and municipal governments (Westhoek et al., 2011). Now, neither the decrease of meat consumption nor the promotion of sustainable eating habits is the goal of such programs (Dagevos and Voordouw, 2013; Hansson et al., 2018; Westhoek et al., 2011). Without strong incentives, manufacturers who launch new vegan products appear to be responding to customer demand and the expanding vegan movement, reducing manufacturing costs, or addressing environmental issues on their own initiative.

Due to their observable efforts in creating and introducing new plant-based items, major corporations have viewed the vegan trend as a growing and sustained phenomenon. By developing cutting-edge goods and production technology, businesses may also be seen as playing a pioneering role in introducing new, inventive vegan products to mainstream customers in their local and national marketplaces. Rogers (2003) indicates two significant factors of the adoption rate of innovations are compatibility and added value. Conversely, the suitability of vegan products depends on how well these innovations fit with consumers' preexisting preferences and expectations (Dedehayir et al., 2017).

Innovation in Traditional Food Products

In a competitive global food market, manufacturers must innovate to preserve and grow their market share (Guerrero et al., 2009). Researchers find a common criterion that improvements in traditional food items must guarantee maintaining the original "taste" and "flavour" to determine whether innovations may be effective (Guerrero et al., 2012; Stolzenbach et al., 2013). In fact, several market research have revealed that customers have unfavorable emotional reactions to processes that alter conventional items (Stolzenbach et al., 2013). According to Guerrero et al. (2009), the modifications must effectively preserve the notion of traditional products, which are predicated on the idea of a basic, natural, simple, and pure product, particularly in the sense that little to no alteration has taken place after the first manufacture. Otherwise, according to other academics, the "new haute cuisine" is seen as a special setting where conventional food preparation and ingredient changes might take place (Guerrero et al., 2009; 2012). Accordingly, innovative techniques used at the restaurants of famous haute cuisine chefs have been examined in the most recent management studies (Messeni Petruzzelli and Savino, 2014, 2015).

Researchers in Nordic and Southern European nations are equally interested in investigating technologies that might impact conventional food items. The connection between a region's history and its traditional cuisine is a key feature that is recommended for growth in Southern nations (Guerrero et al., 2009). Studies of Nordic settings, where chefs, authors, and specialists emphasize the necessity "to continue using local, regional, and national raw goods," also revealed the connection between traditional food items and certain geographic regions (Amilien and Hegnes, 2013). In the context of the Noma restaurant, where studies determined that successful new dishes are mostly based on the exploitation of traditional Nordic ingredients, this method serves as inspiration for the new dishes created there (Messeni Petruzzelli and Savino, 2014).

Remarkably, a recent study on Italian haute cuisine discovered the rise of a new tactic: new products are created by combining traditional ingredients with other ingredients and by utilizing methods from other, far-off cultures (Messeni Petruzzelli and Savino, 2015). The cultural backdrop of Southern European nations, where ethnicity is seen as an acceptable source of invention, may help to explain this final innovation method (Guerrero et al., 2009). Furthermore, studies conducted on Southern European nations have demonstrated that any prospective improvements pertaining to traditional food items must be health-oriented, such as enhanced or functional foods and the decrease of salt, fat, and sugar (Guerrero et al., 2009, 2010, 2012). Conversely, Nordic nations seem to have a more critical stance toward innovation in traditional food items, as they are already regarded as healthy (Guerrero et al., 2009, 2010, 2012).

Remarkably, research in Nordic European countries paid more attention to the "Innovation in traditional food products" than Southern European countries. Furthermore, the results of this stream also appear unexpected. Southern European consumers appear to be more receptive to changes in traditional food goods if those changes improve nutritional value by lowering the amount of salt, saturated fat, or sugar while maintaining the original flavor. Conversely, in Nordic food markets, where traditional food products are already regarded as healthy, introducing novelty seems to be quite challenging.

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