Present Status, Challenges, and Plans for Whole Grain Food Development in China

Cereal-based foods are an important part of the human diet and a major source of energy, protein, vitamin B, and minerals. Influenced by developments in grain processing technology, social and economic developments, and an improved understanding of grain nutrition, food processing and grain consumption have experienced a process of constant development and change. With the recent rapid social and economic development in China and advances in processing technology, Chinese consumers have begun pursuing improvements in taste through the use of manufacturing processes to refine grains. Over time, the disadvantages of increased consumption of refined grains have begun to emerge, such as an increase in the incidence of colorectal diseases.

Nutrition, health, and epidemiological studies from European and American countries have increasingly shown that whole grain consumption is related to a reduced risk of certain chronic diseases, including cardiovascular and cerebrovascular diseases, certain cancers, and type 2 diabetes. Whole grain intake can also contribute to healthy weight control. As a result of these findings, there has been a growing movement worldwide that encourages whole grain consumption. Improvements in public nutrition and health, creation of a thriving society, conservation of natural resources, food security, and transformation of the mode of economic growth are driving forces in the development of whole grain food products in China.

Current developments in Chinese whole grain food products; analysis of the challenges encountered; circumstances favoring development of whole grain products; and the characteristics of a suitable strategy for developing whole grain products are discussed to draw attention to whole grains and promote the development of whole grain products in China.

Whole Grain Product Development Status and Challenges in China

The excessive pursuit of refined grains in China has not only resulted in large losses in nutrients, wasted resources, and increased energy consumption, but has also increased the risk to food safety. In recent years, concerns about food safety and conservation of resources have led many countries to enact policies and regulations that actively encourage the development of beneficial grain processing and provide guidelines for consumption of grain-based products.

Public Education Concerning Benefits of Whole Grains

The excessive pursuit of refined-grain products in China is the result of a lack of public education concerning whole grains and their nutritional benefits. Because the national focus has long been on the development of the Chinese economy, there is a huge deficiency in public nutrition and health education at the national level. In addition, lacking access to sound scientific information, the public can be misled by media reports on popular food trends.

High Consumption and Production of Refined-Grain Foods

The mainstream eating habits of Chinese consumers favor daily consumption of quality refined rice- and flour-based foods. From the perspective of product structure, special rice quality and standard first-class rice are given priority, with production of 22.844 and 35.533 million tons, respectively, which accounts for 31.3 and 31.3% of total output, respectively. Standard second-class rice production is 9.64 million tons (13.2% of total output), and brown rice production is 862,000 tons (1.2% of total output).

Whole Grain-Related Standards, Market, and Product Quality

The major grain crops in China include rice, wheat, and corn, as well as cereals such as highland barley, oats, buckwheat, millet, sorghum, etc. In recent years, grain-based food products available on the Chinese market have contained some brown rice, germinated brown rice, whole wheat flour, oatmeal, and other whole grains, but on the whole, products contain single components, the production scale is small, and there is no standard definition for whole grains. This has resulted in whole wheat flour-based products on the market that are of variable quality, have a high product price, and are difficult to promote.

Whole Grain Research and Development

Whole grain research and development encompasses the breeding, processing, and consumption; industrialization and promotion; nutrition and health; and many other subjects in the field of systems engineering and requires the efforts of scientists in different areas. In the past, the majority of plans for science- and technology-based projects in China have focused on studying and improving the depth of grain processing transformation and the use of grain by-products. There is no specific plan to conduct research on whole grains. As a result, China lacks basic research and data on whole grain food products.

Opportunities for Whole Grain Food Development

Social and economic developments in China are creating a new environment promoting advances in grain processing and consumption and new opportunities for development of whole grain food products.
Increased Awareness of Nutritional and Health Benefits of Whole Grains. With the rapid development of the Chinese economy, the general nutrition and health consciousness of consumers has increased greatly, and interest in the nutritional and health benefits of whole grains has gradually deepened. The contradiction between the growing market demand for whole grain products and the existing refined-grain production structure is increasingly prominent: consumers want to buy brown rice, whole wheat, and whole grain foods but cannot find suitable products on supermarket shelves.

New Whole Grain Market Potential. A World Health Organization report predicts that the cost of premature deaths due to heart disease, stroke, and diabetes in China (national income and loss estimate at purchasing power parity) will be US$558 billion over the next 10 years. It is predicted that over the next 10 years 388 million people worldwide will die of chronic diseases. At present, the proportion of deaths due to nutritional diseases is growing, and the incidence of obesity and nutrition-related chronic diseases is rising each year. These chronic diseases have a significant impact on a person's quality of life and ability to work and a nation's social and economic development and creation of a thriving society. They also create great potential for an expanded health-foods market.

Development of the Food Processing Industry. Since the start of the 21st century, China's food processing industry has been developing rapidly. Strong promotion of comprehensive national strength combined with implementation of a “scientific development” policy is leading to more rational development of China's food processing industry. To improve the structure and capacity of the food processing industry, promote enterprise and organizational structure and adjustments in product structure, and speed up transformation of the mode of development, China should place more emphasis on comprehensive utilization of resources and avoid blindly pursuing grain processing for taste, which leads to wasted resources.

Whole Grain Food Development Strategy

The experience of European and American countries, as well as that of other developed countries, with whole grain product development provides a good basis and reference for the development of whole grain foods in China. To increase whole grain intake in China, product development and consumer acceptance of whole grain foods must be strengthened. Increased whole grain intake would help reduce the incidence of certain serious diseases and improve the nutrient content and health benefits of residents’ diets. Development of whole grain processing technology would also conserve food resources by minimizing waste and play a key role in “sustainable development” in the Chinese food industry.

Strengthen Public Education Concerning Benefits of Whole Grain Consumption. To better safeguard people's health, and at the same time reduce wasted food resources and energy consumption in processing, television, the Internet, and other modern information channels should be fully utilized to strengthen public education and nutrition messages about the benefits of whole grain consumption, ultimately increasing nutrient intake through consumption of a greater proportion of healthy whole grain foods.

Establish and Integrate Elements Required for Whole Grain Food Processing. To promote the development of a whole grain foods industry and market in China, research institutions, government departments, the government health organization, food and food processing enterprises, the department of education, the science and technology management department, consumers, media, etc. all need to work together to build a healthy whole grain production and promotion platform. This platform can then be used to effectively integrate various resources and elements and promote development of whole grain processing technology.

Increase Whole Grain-Related Research. There is a need for research on the relationship between the nutrients contained in whole grains and health, as well as their mechanisms of action. This research should aim to establish the main differences in the biological active components of whole grains, the influence of processing on these components, their metabolism in the human body, and further clarification of the role of these components in the prevention of metabolic syndrome and related diseases and their physiological mechanisms.

Whole grain quality, standards, and processing need to be strengthened through new technologies and product diversification. To change the grain consumption characteristics and habits of Chinese consumers, the quality and standards for whole grains, new technologies for processing whole grain foods, and the effects of processing on the biological effectiveness of grain nutrients must be studied to provide consumers with acceptable taste, color and luster, and shelf stability in traditional and nontraditional whole grain products.

Finally, research on the whole grains market should be performed. Studies should examine the demand for whole grain foods in different age and consumer groups, as well as consumer acceptance of whole grain food products. Studies should support the smooth incorporation of whole grain products into the market, examine effective whole grain promotion mechanisms, and focus on younger consumers to promote increased demand for whole grain products.

Summary

Promoting the development of the whole grains market in China through implementation of a scientific development concept will create a path to sustainability-, nutrition-, and health-focused whole grain food product development. If all sectors of the food industry and consumers grasp this development opportunity, it will lead to an increase whole grain food intake and improve public nutrition and health.

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