

The future of functional foods in Canada

AND THE EVOLUTION OF FOOD BIOACTIVE CONCEPTS

Growing consumer demand for functional foods in Canada leading to big opportunities for innovation within the industry

*By H.P. Vasantha Rupasinghe,
Professor of Functional Foods & Nutraceuticals,
Department of Plant, Food, and Environmental Sciences, Dalhousie University*



The COVID-19 pandemic has influenced our dietary habits and inspired some food bioactives. Canadians seem to be not too dissimilar from the rest of the world when it comes to choosing their food. Consumers' belief in food as medicine is increasing as seen by elevated sales of functional foods and beverages. Consumers are thinking of a more preventive approach to health and specifically seeking foods and beverages that could support immunity directly or through an enhanced gut microbiota. This is an opportunity for the functional food industry to innovate new food and beverage products.

Young consumers are also looking for sustainably healthy food with ethical and humane production. The pandemic has also forced us to think about homegrown food, ways to extend the growing seasons, controlled-environmental and vertical farming, automation and robotics for farms and food manufacturing, and non-conventional food delivery systems.

The trends in plant-based foods, especially protein, also continue to grow and are a development in the mitigation of GHG emissions and sustainable food production for the growing global population. The importance of incorporating bioactives in a healthy diet to reduce the risk of non-communicable diseases (NCDs), as well as to manage infectious diseases including COVID-19, has also been revealed and could play a significant role in protecting the health of a growing elderly population in Canada as well as to combat the increasing prevalence of cancers, cardiovascular diseases, and type 2 diabetes.

What are functional foods and food bioactives?

Food can be regarded as "functional" if it is shown to benefit one or more target functions in the body, beyond adequate nutrition, in a way that improves health and well-being or reduces the risk of disease. The concept of functional food is built around what Hippocrates, the father of medicine, stated thousands of years before: "Let thy food be thy medicine and thy medicine be thy food."

However, over time, rapid advancements in food production after the green revolution, in combination with changing lifestyles, have made our regular diet nutritionally imbalanced, energy-dense, and deficient in bioactives. Food bioactive refers to the non-nutrient, naturally occurring constituents of food that have protective effects against NCDs.

Bioactives do not have a direct role in growth and development or in preventing typical deficiency conditions. Food bioactives are sometimes called nutraceutical

ingredients and can be classified into many sub-groups of flavonoids and other polyphenols, carotenoids and other isoprenoids, glucosinolates, omega-3 fatty acids, bioactive peptides, prebiotics and probiotics and some minerals. For example, polyphenols, especially catechins, are the primary food bioactive of green tea that provide antioxidative and other physiological functions, bringing health benefits that extend beyond those of basic nutrition.

Now, the governments of many countries around the world have started initiatives to facilitate the rebirth of this ancient concept in a much more sophisticated and regulatory environment. For example, in 1991, Japan first introduced the world to 'functional foods' through Foods for Specified Health Use (FOSHU). In the US, a few health-related statements or claims are allowed on food and dietary supplement labels. The US FDA approves health claims confirming a relationship between components in the diet and risk of disease or health condition, supported by significant scientific agreement. Countries such as China and South Korea have even made Recommended Dietary Allowances (RDA) for common food bioactives such as soy isoflavones.



Functional foods: the Canadian versions

In Canada, though there are no formally recognized functional foods, there are some categories of regulated specialized food which bear some aspects of the concept of functional foods. For example, supplemented foods are broadly defined as pre-packaged products that are manufactured, sold or represented as food, which contain added bioactive or herbal ingredients, vitamins, minerals, or amino acids. These ingredients may perform a physiological role beyond the provision of nutritive requirements. It seems that plant ingredients incorporated into supplemented food are growing in Canadian groceries.

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Health Canada also allows foods with nutrient claims. The function claims are for the specific component of the food. For example, docosahexaenoic acid (DHA)-containing foods could claim: “DHA, an omega-3 fatty acid, supports the normal physiological development of brain, eyes, and nerves primarily in children aged under 2 years.” For the foods with probiotic claims, species-specific claims are accepted if a serving contains a minimum of 1 billion colony-forming units of one or more eligible microorganisms. A

few disease risk reduction claims are allowed on food labels in Canada: for example, “A healthy diet rich in a variety of vegetables and fruit may help reduce the risk of heart disease” and “Selenium helps against oxidative stress.” Novel food ingredients undergo a mandatory pre-market assessment prior to being authorized for sale in Canada. Marketers require a Temporary Marketing Authorization Letter (TMALS) from Health Canada.

Future of Canadian functional food: Challenges and prospects

In order to continue advancing the functional food sector, and to provide true physiological health benefits to consumers, it is critical to establish Dietary Reference Intakes (DRIs) for common food bioactives. Health Canada and respective research institutes are required to work closely to establish DRIs to develop effective and safe doses to guide food manufacturers. It is also required to educate Canadians on food bioactives. The impact of nutrition and food bioactives should be included in the Canadian education system, including medical schools.

A survey conducted among Canadians in 2021 by Dalhousie University indicates that only 21.4% of Canadians will think about food’s bioactive properties when purchasing fruits or vegetables. However, 48% of Canadians eat fruits and vegetables to reduce cancer risks. These trends indicate that there are a lot of prospects to bring the concept of functional foods to Canadian consumers. The same survey indicated that the major barrier to fruit and vegetable consumption is the cost (39.5%). Thus, the promotion of bioactive enriched fresh or supplemented food as functional foods requires government policies to make them available at affordable prices.

With the recent trends in foods, Canada has comparative advantages to manufacture many functional foods and ingredients for the local and global market. These include, but are not limited to, pulse protein hydrolysates and bioactive peptides, healthy vegan lipids from oil seed crops and cultivated microalgae, prebiotic fibres from diverse crops, their processing by-products, upcycled ingredients, and immunity-enhancing phytochemicals and micronutrients from cultivated super-berries and vertically farmed green leafy vegetables. In Canada, innovative food manufacturing is urgently required for promoting and expanding fermented food and gluten-free supplemented food for special dietary use such as weight management, cognitive health, and healthy aging. **BL**