



Opportunities and Challenges Facing the Canadian Functional Foods and Natural Health Products Sector

As far back as 2,400 years ago, Hippocrates recognized the connection between food and health when he counselled, “Let food be thy medicine and medicine be thy food”. Today, whether based on choice or necessity, consumers are seeking food ingredients that will go beyond basic nutritional benefits to enhance general well-being and even disease prevention. In response, food scientists are developing ingredients from plants, animals, marine sources and micro-organisms with the promise of improved health outcomes. Growing consumer interest, combined with a greater understanding of food–health relationships, rising healthcare costs, and an aging population, are factors driving the insatiable market for functional foods and natural health products (FFNHP) (see Glossary for definitions).

The FFNHP sector does not fit neatly into standard industrial classification systems (such as North American Industry Classification System [NAICS] or Harmonized System [HS] codes) as it cuts across numerous agri-food categories. Depending on the reference, FFNHP products can be considered conventional foods, specialty foods, ethnic foods, medical foods, nutraceuticals, or even pharmaceuticals. There is, however, consensus on its importance to the Canadian economy. Based on a census survey of the FFNHP sector conducted by Statistics Canada on behalf of Agriculture and Agri-Food Canada, the sector generated \$11.3 billion in revenues in 2011 (Statistics Canada 2013a).

This report helps fill some of the information gaps about the Canadian FFNHP sector including consumer profile and preferences, market size and performance, sourcing challenges, labour issues, foreign direct investment, distribution channels, regulatory issues affecting the sector, and research and development (R&D). It represents a compilation and analysis of a variety of available data sources including consumer public opinion surveys, market research studies, government data sources, domestic and export market opportunities, and trend forecasts.

Consumer Profile and Preferences

Understanding how consumers perceive functional foods and the factors that influence their purchasing behaviour is the key to successful commercialization. Information about the wants and needs of Canadian consumers is constantly shifting, which challenges the sector’s ability to assess market conditions, innovate, and develop new products quickly. However, recent polls identify some consumer purchasing activities. According to a 2012 Ipsos-Reid report, 98% of those surveyed purchased some type of functional food or beverage in the past year. The most common types included cereals (e.g. whole grain, increased fibre, added omega-3s or omega-6s), healthy snack foods, yogurt with added probiotics, and juices (with added nutrients, antioxidants, etc.). The most sought-after ingredients were fibre (87%), vitamins and minerals (86%), protein (85%) and omega-3s (80%). In addition, more than 8-in-10 Canadians had consumed natural health products (NHPs)—the most common types being

vitamins/minerals (71%), omega-3s/essential fatty acids (45%), probiotics (34%) and antioxidants (33%)—and 56% said they were probably or definitely likely to purchase NHPs in the future (Ipsos-Reid, 2012).

In another public opinion survey, 39% of respondents reported that lack of knowledge about NHPs posed a major purchase barrier (Ipsos-Reid, 2011). Interest in the health-promoting benefits of FFNHPs and demand for functional ingredients tends to be strongest for products that have Canadian government-approved health claims (AAFC, 2011a).

According to industry estimates, the largest increases in NHP demand over the next few years are expected to be for glucosamine, probiotics, sterol esters, whey protein, and omega-3 fatty acids (AAFC, 2011b). This is reflected by some popular products being produced in Canada, including margarines with phytosterols, drinks with herb blends, foods with added soluble fibre and yogurts with probiotics (Statistics Canada, 2013a).

Companies developing functional food products have begun marketing to specific demographics such as the aging population, young adults, and mothers. Functional foods that attract aging consumers include cholesterol-reducing spreads, milk and yogurt, while parents are interested in products that will benefit their children's health, such as omega-3 and DHA-enriched products for brain development. Given the amount of influence children have on household spending in the developed markets of North America, Western Europe, Asia and Australasia, child-specific functional foods may lead to success as this trend continues to gain momentum (AAFC, 2011b).

Media messages providing conflicting interpretation of scientific advances contribute to consumers being cautious of health claims on packages. Despite the fact that regulatory regimes have evolved to address scientific uncertainty around the safety of novel foods and technologies and the efficacy of bioactive ingredients, some consumers are moving in the opposite direction—toward a preference for basic foods, and away from foods with added vitamins, minerals and other bioactives. This places the onus on manufacturers to ensure that they have high quality scientific studies to substantiate their allegations. Since almost one quarter of Canadians think their eating habits and health are only fair to poor and almost all Canadians indicate that they have done something during the past year to improve their eating and drinking habits (Canadian Foundation for Dietetic Research, 2013), opportunities exist to encourage Canadians to change current behaviours.

Market Size and Performance

While market researchers may debate the criteria used to define product categories and the methodology behind their definition of the FFNHP market, they all agree that the global demand for FFNHPs is growing exponentially. Innovative FFNHP products are being launched continuously, and competition is fierce. The global FFNHP market is expected to continue growing at an annual rate of 8% to 14%, outpacing that of the traditional processed food market, and is estimated to reach approximately US\$477 billion by 2015 (Nutrition Business Journal, 2013)¹.

Compared to other countries, such as the United States, United Kingdom and Japan, FFNHPs are still relatively new to Canadians and offer much room for growth. Given the ready access to a plentiful supply of quality raw materials, it is not surprising that the domestic market absorbs about 75% of current food and beverage processing sector outputs. Examples of some of the more popular functional foods include

¹ It should be noted that the *Nutrition Business Journal* (NBJ) defines functional foods more broadly than the Statistics Canada definition provided in the Glossary. NBJ includes all foods with a valid claim, foods with added ingredients for health benefits, and those that are marketed for or perceived to have a significant health or performance benefit.

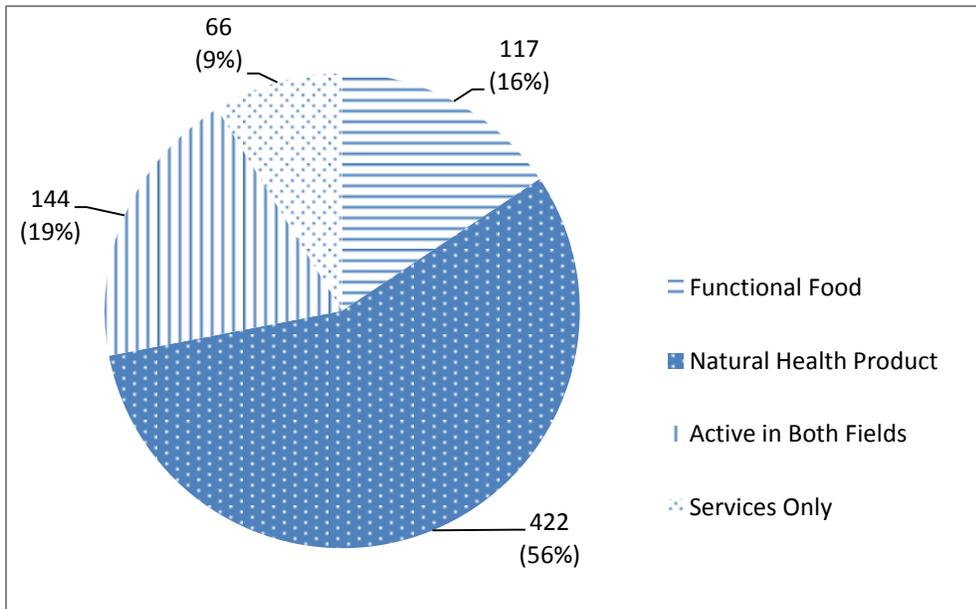
fortified milk, yogurt, oils, high fibre breads, organic and gluten-free bakery products. In the future, pro/prebiotic drinking yogurt is projected to show above-average growth in Canada (Euromonitor, 2013a).

Canada's many competitive advantages offer significant economic opportunities to meet these growing demands on a global scale. The majority of exports from this sector can be attributed to NHPs (\$1.3 billion out of \$1.7 billion total). Approximately half of all FFNHP revenues from Canadian exports came from the U.S., followed by the European Union, China and Japan (Statistics Canada, 2013a).

Despite its relatively small contribution to global sales (approximately 2.5%) (Nutrition Business Journal, 2013), Canada has an excellent reputation as a supplier of high quality FFNHPs. In fact, the FFNHP sector is Canada's fastest growing agriculture and agri-food sector. Revenues of \$11.3 billion and exports of \$1.7 billion are significant when compared with total food product revenues of \$92.8 billion and total food product exports of \$24.6 billion (Statistics Canada, 2013a). The Canadian economy has experienced relatively stable growth in output, income, and household spending alongside escalating demand for health and wellness-promoting products. This offers the agricultural and agri-food industries the opportunity to develop new FFNHPs for both domestic use and export. Canadian FFNHP industry sales are estimated to have grown by about 9% between 2012 and 2013 (Nutrition Business Journal, 2013), suggesting considerable growth potential.

When Statistics Canada surveyed 750 Canadian establishments involved in activities related to FFNHP in 2011, NHP firms tended to specialize exclusively in NHP products. In contrast, functional food firms derived revenues from non-functional food business activities as well. Firms involved in production of both functional foods and NHPs generated revenues roughly evenly from both streams. The average annual revenue of a functional food firm was \$38 million, while an NHP firm generated \$7 million, and a firm involved in producing both functional foods and NHPs typically earned \$23 million. The average revenue of a functional food product line was \$1.2 million while that of an NHP product line was \$0.2 million (Statistics Canada, 2013a). Figure 1 provides a breakdown of Canadian functional food and NHP establishments by sub-sector.

Figure 1: Functional Food and Natural Health Product Establishments by Sub-Sector



Note: Totals may not add up due to rounding.

Source: Statistics Canada (2013a): 2011 Functional Foods and Natural Health Products Survey

The FFNHP sector experiences a high rate of new product failures, due in part to insufficient market research. Consequently increased market share is generally achieved through improved margins and customer loyalty (Hobbs, 2002). Although functional foods possess unique nutritional and health characteristics, they still compete with conventional foods for market share and shelf space in retail stores. As a result, the sector's success is influenced not only by the wide range of products, but also different market segments and economic conditions (Hobbs, 2002).

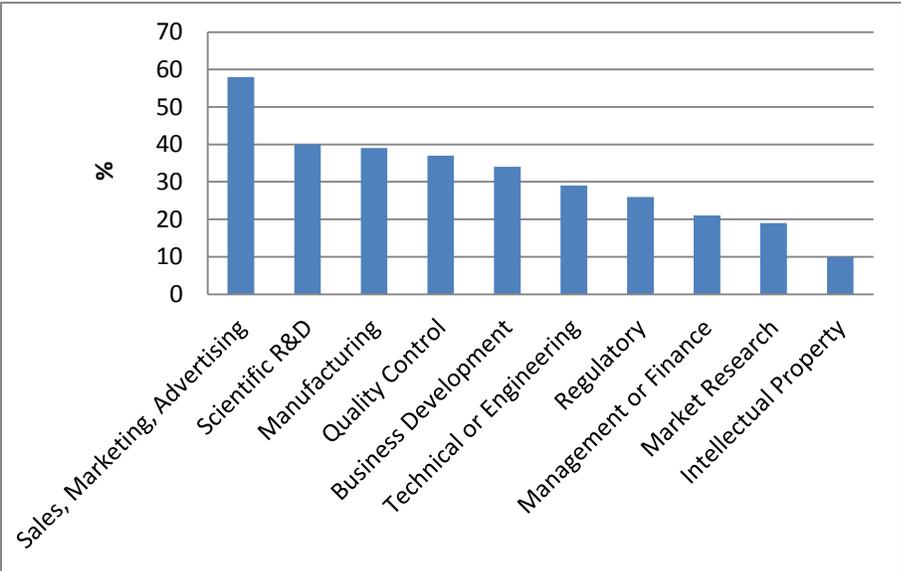
Sourcing Challenges

Quality and year-round availability were the most important determinants for companies sourcing agri-based inputs from other countries even if such inputs were available from Canadian sources (Statistics Canada 2013a). In fact year-round availability, regulatory approval and other factors out-weighed lower costs. One out of three FFNHP firms used bioactives or medicinal ingredients derived from flowers, herbs and spices; fruits; and seafood or other marine species. Yet these inputs were primarily imported, while inputs such as dairy products, oil seeds, and grains and cereals were sourced equally from Canada and abroad (Statistics Canada, 2013a). Potential reasons for these inputs being sourced elsewhere include Canada's shorter growing season due to its northern climate, and inadequate volumes (e.g. Jerusalem artichoke and chicory grown for inulin, or sea buckthorn for antioxidants) leading to unpredictable or insufficient supply. Opportunities exist for a consistent supply of functional ingredients through contracts or special supply arrangements (Hobbs, 2002). The complexity of this sector lends itself to the formation of new supply chain partnerships (strategic alliances and joint ventures) among input suppliers, farmers, researchers, and food processors.

Labour Issues

In 2011, 90 of the FFNHP establishments surveyed (12%) indicated that they had unfilled positions, with almost 60% of the vacancies in NHP establishments (Statistics Canada 2013a). Overall, the competencies most lacking yet considered critical to reaching long-term strategic goals were in sales, marketing and advertising; scientific R&D; and manufacturing (see Figure 2).

Figure 2: Type of Unfilled Positions in Functional Food and Natural Health Product Establishments



Source: Statistics Canada (2013a): 2011 Functional Foods and Natural Health Products Survey

NHP establishments reported the largest number of vacancies in manufacturing and quality control positions. In the functional food establishments the greatest need was for positions in R&D, manufacturing and engineering. The top reasons for the vacancies were lack of qualifications and high compensation requirements by candidates. Some FFNHP establishments resolved the problem through partnerships or contracting out to increase specialized resources. Just over one fifth of establishments used collaborative arrangements to meet their needs, including scientific and R&D expertise, new marketing/distribution channels, production or manufacturing facilities, and regulatory affairs. Forty-three percent of establishments (most of which were NHP firms) contracted out such specialized skills as regulatory affairs, clinical trials, custom manufacturing/formulation and quality control (Statistics Canada, 2013a).

Foreign Direct Investment

Canada is an important destination for foreign direct investment (FDI) in the FFNHP sector. In fact, 40% of FDI projects are related to the FFNHP sector. In 2010, FDI in Canada's food and beverage industry reached an accumulated \$22.7 billion. Between 2003 and 2011, nearly 100 foreign companies established greenfield FDI projects (i.e. established a facility where none previously existed) in the food and beverage sector in Canada (Invest in Canada, 2012). Statistics Canada reported that 110 establishments attempted to raise capital for FFNHP purposes in 2011. Of the 58 establishments that successfully attracted \$42 million, almost 60% were NHP establishments. The funds came primarily from conventional funding sources (banks, credit unions, initial public offerings), angel investors and Canada's industrial research assistance program (Statistics Canada, 2013a).

Canada has welcomed multi-national companies such as Archer Daniels Midland Agri-Industries, Bayer Crop Science, Bunge, Cargill, Coca-Cola, Groupe Danone, Mona Vie, Nestlé, and Ocean Spray Cranberries. They were attracted by generous R&D tax treatment, access to high quality natural resources, Canada's internationally recognized regulatory and food inspection systems, lower corporate tax rates, the impressive number of food-related registered patents, lower utility costs (industrial gas and electricity), financial stability, a highly skilled workforce, and specialized researchers and food development centres (Invest in Canada, 2012).

Distribution Channels and Points of Purchase

According to Statistics Canada, establishments active in both the functional food and NHP fields reported a preference for using direct to retailer distribution channels. The second preferred method of distribution for NHP-only establishments was direct distribution to other manufacturers and wholesalers, while functional food-only establishments favoured non-traditional distribution channels as their second choice (Statistics Canada, 2013a).

Once considered niche products, FFNHPs used to be found only in specialty retailers/food stores or farmers' markets. However, with their growing mainstream appeal, they are now appearing in the more traditional channels of grocery stores and mass retailers. In fact, natural health food stores now rank only fourth among the most common retail locations for NHPs. Canadians who buy NHPs are more likely to buy them in grocery stores (65%), pharmacy/drug stores (59%) and mass retailers (47%) (Ipsos-Reid, 2012).

Private label products account for a small portion of functional packaged food. Placing functional food products on the store shelves in Canada usually requires significant investment in product development and regulatory approval; as a result, the product selection is limited, and tends to be found in Canada's largest retail chains such as Loblaws, Sobeys and Metro (Euromonitor, 2013b).

Retailers are experimenting with new concepts to attract FFNHP consumers. For example, Loblaws unveiled its new flagship branded store in Toronto's Maple Leaf Gardens, which features an emphasis on healthier food and beverage options, organic produce and in-store dietitians to help select healthier choices (Euromonitor, 2013b).

Regulatory Framework

Canada regulates FFNHPs, including related health claims, based on scientific evidence and the level of risk to consumer health and safety. Responsibility for the regulation of FFNHPs is divided between Health Canada's Food Directorate and its Natural Health Products Directorate. The Canadian Food Inspection Agency (CFIA) monitors and enforces regulatory compliance of foods (including functional foods), while Health Canada has the same responsibility for NHPs. The rigorous regulatory environment serves to establish and sustain consumer and buyer confidence in Canada's reputation for safe and high quality foods and ingredients.

FFNHP companies perceive the regulatory and labelling requirements as one of their greatest barriers to production and development. This is followed by lack of public awareness or acceptance, access to human resources and access to information (Statistics Canada, 2013b). The majority of companies (79%) had contacted a regulatory agency within the past year to seek information, most often on labelling and advertising, submissions for health claims on food, and novel food designation (Statistics Canada, 2013a).

Delving more deeply into the Statistics Canada survey data revealed that all of the FFNHP subsectors shared the perceived concern that regulatory/labelling requirements act as a barrier to production and development, both in Canada and in international markets (Statistics Canada, 2013b). Smaller establishments (20-49 employees) felt the regulatory burden most acutely. It is noteworthy that the companies exporting to three or more countries were less troubled by regulatory issues (Statistics Canada, 2013b). Perhaps experience with one regulatory regime increased their ability to navigate others.

When regulatory requirements were seen as a barrier to production and development, there was a higher tendency to collaborate or outsource to access expertise (Statistics Canada, 2013b). To meet regulatory and labelling requirements in domestic and international markets, 53% of firms indicated it was important to collaborate with other entities (e.g. other firms, academic institutions) and approximately one fifth of establishments contracted regulatory expertise (Statistics Canada, 2013b). In some cases assistance was required due to unfilled positions—26 establishments indicated having unfilled positions requiring regulatory competencies.

With the proliferation of functional foods in the marketplace, health claims offer a way to communicate to consumers the health benefits of foods with specific formulations (Jew et al., 2008). Inability to make health claims may result in firms developing fewer product lines despite their potential for commercial success (Herath et al., 2008).

Similar to the EU, Australia and New Zealand, Canada requires health claims to be based on scientific substantiation. Depending on the type of claim, companies may be required to prepare a dossier addressing the claim efficacy, dosage requirements and possible adverse effects. It is important for companies pursuing health claims to factor in the time for preparation and review of the petition as part of their business plan.

Despite their relatively high price point, functional spreadable oils and fats, such as Becel Pro-Activ with plant sterols, continue to evolve and expand, underscoring the importance of a scientifically substantiated

health claim. However, the lack of approved claims for probiotics has not hindered the growth in dairy products as they have focused on taste, quality, popularity of Greek yogurt, and protein content. The expanding array of successful probiotic supplements, such as Align, might negatively affect the overall demand and sales of functional yogurt (Euromonitor, 2013a).

With respect to beverages, energy drinks came to prominence in 2012 when Health Canada changed their status to be regulated as foods instead of as NHPs. The new regulations stipulate that energy drinks should feature a Nutrition Facts table, limit the amount of caffeine to 180 mg per serving, and contain warning labels about mixing with alcohol. However, single-dose energy shots fall under the NHP regulations and are not limited to 180 mg of caffeine per serving (Health Canada, 2011).

While Canada has a well-defined mandatory fortification policy (e.g. replacement of nutrients lost during processing or food enrichment for public health reasons), discretionary fortification beyond certain levels is evaluated on a case-by-case basis. Health Canada is expected to announce new policies on supplemented foods in 2014.

The regulatory environment in Canada will evolve further due to pressure from the marketplace, evolving science and the latest trends in product development. The approval of stevia as an ingredient in foods and beverages is an example of this changing environment (Euromonitor, 2013b).

Research and Development

According to the Statistics Canada survey, spending on FFNHP R&D in 2011 amounted to \$238 million. As a percentage of revenues, NHP R&D represented two and half times the amount spent on functional food R&D (0.8%). The predominant form of intellectual property protection for FFNHP firms was trade secrets (181 firms), followed by trademarks (175 firms) and patents (94 firms). In this sector, patents were not the primary instruments used by firms to protect FFNHP innovations (Statistics Canada, 2013a).

A Case in Point – Canada: a Leader in the Hemp Market

The proximity of Canada to the United States—a major agriculture and agri-food player and favoured trade partner—creates unique opportunities. For example, hemp was legalized in Canada in 1998. The U.S. only legalized the growing of hemp in 2014. Canada has a 10-year head start on growing, processing, distributing and complying with regulations for food grade hemp. Canada is now the largest producer of hemp seed and edible by-products in the world. Prized for its seeds, oil, oilcakes, protein and fibre, of the \$21 million of hemp exported by Canada, one third went to the U.S. (Statistics Canada, 2013c). While precise data are not available on the size of the U.S. market for hemp-based products, current industry estimates report that U.S. retail sales of all hemp-based products may exceed \$300 million per year (Congressional Research Service, 2013).

What the Future Holds

With improvements in the economy and renewed consumer confidence, forces other than price are driving buying decisions. These include: ethical ingredient sourcing, whole foods, functional packaging, simplified nutrition, and convenience. Opportunities abound for the creation of new markets, establishment of partnerships and exploration of crowd-source funding investments.

Functional food growth is predicted to be in the areas of trans fat replacements, sodium substitutes, sugar alternatives, free from allergens (in particular, gluten-free foods), clean labels, whole foods, naturally sourced bioactives, nutrigenomics, protein boosters and new technologies. The outlook for innovations in

NHPs is pointing to joint health, muscle building, cognitive health, energy endurance beyond caffeine, weight management and digestive health (AAFC, 2012).

Global demand for FFNHPs is expected to reach \$477 billion by 2015 (Nutrition Business Journal, 2013) and will be driven by burgeoning middle classes, desire for reputable product and interest in optimizing health. The growing appetite for FFNHPs, both domestically and abroad, shows no signs of abating, and Canadian manufacturers and suppliers are rising to the challenge. With access to natural resources, a world-renowned science-based regulatory system, a consistent supply of safe and high quality ingredients, skilled scientific researchers and food development centres, access to the North American market, and a stable economy, the Canadian FFNHP sector is uniquely positioned to take advantage of the opportunities ahead.

A comprehensive listing of Canadian companies offering FFNHP products and services is provided by Agriculture and Agri-Food Canada's Functional Foods and Natural Health Products Database (www.agr.gc.ca/FFNdatabase).

Glossary

Bioactive is a substance that is demonstrated or purported to have a favourable effect on health. In the context of food, bioactives include nutrients (e.g. vitamins and minerals) and non-nutrients (e.g. live microbes) that may be inherent in or added to food.

Functional Foods are similar in appearance to, or may be, a conventional food, consumed as part of a usual diet, which is demonstrated to have physiological benefits and/or to reduce the risk of chronic disease beyond basic nutritional functions. They are foods that have been actively enhanced with bioactives during production (e.g. probiotics, omega-3, sterols).

Natural Health Products are naturally occurring substances that are used to restore or maintain good health. Often referred to as alternative or complementary medicines, and sometimes as nutraceuticals, natural health products come in a wide variety of forms like tablets, capsules, tinctures, solutions, creams, ointments and drops. They include vitamins, minerals, amino acids, essential fatty acids, herbal remedies, homeopathic medicines, traditional medicines and probiotics.

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