



Catalogue no. 88F0006XIE — No. 016
ISSN: 1706-8967
ISBN: 0-662-41612-0

Working Paper

Science, Innovation and Electronic Information Division

Functional Foods and Nutraceuticals: The Development of Value-added Food by Canadian Firms

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Science and Innovation Surveys Section
Science, Innovation and Electronic Information Division (SIEID)

Functional Foods and Nutraceuticals: The Development of Value-added Food by Canadian Firms

2002

Published by authority of the Minister responsible for Statistics Canada

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September 2005

Catalogue no. 88F0006XIE, no. 016

ISSN: 1706-8967

ISBN: 0-662-41612-0

Frequency: occasional

Ottawa

Cette publication est disponible en français sur demande (n° 88F0006XIF au catalogue).

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The science and innovation information program

The purpose of this program is to develop **useful indicators of science and technology activity** in Canada based on a framework that ties them together into a coherent picture. To achieve the purpose, statistical indicators are being developed in five key entities:

- **Actors:** are persons and institutions engaged in S&T activities. Measures include distinguishing R&D performers, identifying universities that license their technologies, and determining the field of study of graduates.
- **Activities:** include the creation, transmission or use of S&T knowledge including research and development, innovation, and use of technologies.
- **Linkages:** are the means by which S&T knowledge is transferred among actors. Measures include the flow of graduates to industries, the licensing of a university's technology to a company, co-authorship of scientific papers, the source of ideas for innovation in industry.
- **Outcomes:** are the medium-term consequences of activities. An outcome of an innovation in a firm may be more highly skilled jobs. An outcome of a firm adopting a new technology may be a greater market share for that firm.
- **Impacts:** are the longer-term consequences of activities, linkages and outcomes. Wireless telephony is the result of many activities, linkages and outcomes. It has wide-ranging economic and social impacts such as increased connectedness.

The development of these indicators and their further elaboration is being done at Statistics Canada, in collaboration with other government departments and agencies, and a network of contractors.

Prior to the start of this work, the ongoing measurements of S&T activities were limited to the investment of money and human resources in research and development (R&D). For governments, there were also measures of related scientific activity (RSA) such as surveys and routine testing. These measures presented a limited picture of science and technology in Canada. More measures were needed to improve the picture.

Innovation makes firms competitive and we are continuing with our efforts to understand the characteristics of innovative and non-innovative firms, especially in the service sector that dominates the Canadian Economy. The capacity to innovate resides in people and measures are being developed of the characteristics of people in those industries that lead science and technology activity. In these same industries, measures are being made of the creation and the loss of jobs as part of understanding the impact of technological change.

The federal government is a principal player in science and technology in which it invests over five billion dollars each year. In the past, it has been possible to say only *how much* the federal government spends and *where* it spends it. Our report **Federal Scientific Activities, 1998 (Cat. No. 88-204)** first published socio-economic objectives indicators to show *what* the S&T money is spent on. As well as offering a basis for a public debate on the priorities of government spending, all of this information has been used to provide a context for performance reports of individual departments and agencies.

As of April 1999, the Program has been established as a part of Statistics Canada's Science, Innovation and Electronic Information Division.

The final version of the framework that guides the future elaboration of indicators was published in December, 1998 (**Science and Technology Activities and Impacts: A Framework for a Statistical Information System**, Cat. No. 88-522). The framework has given rise to **A Five-Year Strategic Plan for the Development of an Information System for Science and Technology** (Cat. No. 88-523).

It is now possible to report on the Canadian system on science and technology and show the role of the federal government in that system.

Our working papers and research papers are available at no cost on the Statistics Canada Internet site at <http://www.statcan.ca/cgi-bin/downpub/research.cgi?subject=193>.

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Highlights

- In 2002, an estimated 294 firms in Canada engaged in activities with functional food and nutraceutical products. Ontario counted 75 firms, Quebec and British Columbia each 72, and Saskatchewan 33^{E,1}. One-third (37%) of firms had fewer than 10 employees.
- More firms were engaged in only nutraceutical activities (46%) than in only functional food activities (28%), and just over one-quarter of firms were involved in both. Half of the firms (51%) were engaged in the production, distribution or sales of plant-based nutraceuticals.
- Wholesalers were the most commonly used distribution channel (61% of firms). Over half of the firms surveyed (57%) indicated that they exported their products. One-quarter of firms sold products for export only.
- Three-quarters of firms (75%) classified themselves as private corporations.
- One-third (37%) of firms invested in research and development of nutraceuticals and one-third (34%) invested in research and development of functional foods.
- Over 60% of all firms believed that the ability to use claims about reducing the risk of diseases, generic health claims and structure-function specific claims would have a positive impact on sales.

1. The symbol ^E indicates a standard error of between 7.5% and 14.99% or a coefficient of variation (CV) between 15.00% and 29.99%. When the figure is not accompanied by a symbol, the standard error is between 0 and 7.5% or the CV is between 0 and 14.99%. Some data with a higher standard error or CV are precise enough for some purposes.

Acknowledgments

Members of the Steering Committee for the Development of The Functional Foods and Nutraceuticals Survey:

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For their assistance in developing this publication, the author would like to thank:

Agriculture and Agri-Food Canada

Allison Rodriguez Miranda
Brian Rattray

Statistics Canada

Alan Bulley
Christian Houle
Antoine Rose
Patti Wunsch

Background

Agriculture and Agri-Food Canada (AAFC), in consultation with industry representatives, recognized the need to conduct The Functional Foods and Nutraceuticals Survey in Canada. The survey was designed to provide a benchmark measurement of the industry and a better understanding of the scope and nature of the sector.

AAFC held a think tank session in February 2002 to begin the process of determining which information requirements of government and industry stakeholders could be obtained from a survey, and to discuss data collection and analysis as well as distribution of the information to end users.

AAFC and Statistics Canada designed the survey instrument, and the survey was carried out in the spring of 2003 for the 2002 reference year. AAFC plans to conduct the survey every two years for purposes of tracking the development of functional foods and nutraceuticals over time—in other words, to enable analysis of trends and growth by categories. The next iteration of the survey is scheduled for 2005 for the 2004 reference year.

What are functional foods and nutraceuticals?

Functional foods are food components that, according to Health Canada,² provide demonstrated physiological benefits or reduce the risk of chronic disease, above and beyond their basic nutritional functions. Tomatoes with enhanced lycopene levels and foods with added soluble fibre, for example, are functional foods. According to AAFC, the following are examples of functional food products produced by Canadian companies: milk, cheese and eggs that are all enriched with omega-3 fatty acids; yogurt enhanced with live active cultures (probiotics); fruit juices and drinks with increased antioxidant levels; cereals and grains such as wheat, oat, barley and fenugreek products with enhanced amounts of dietary fibre; modified fatty acid vegetable oils; and vegetable proteins from soy, canola and hemp, legumes and fruit products.³

A nutraceutical, according to Health Canada², is a product that is isolated or purified from foods that is generally sold in medicinal forms not usually associated with food, such as powders, tablets or capsules. It is demonstrated to have a physiological benefit, or to provide protection against chronic disease. AAFC describes nutraceuticals as products extracted, purified or produced from a plant, animal or marine source (e.g. antioxidants from blueberries, elk velvet, fish oils), or produced from dried, powdered, or pressed plant material, such as ginseng. Omega-3 and lycopene capsules are examples of nutraceutical products that are sold in Canada.³

Functional food and nutraceutical products represent a value-added growth opportunity for the Canadian agri-food industry, both domestically and internationally. The market is driven by the aging population, rising health care costs, advances in food technology and nutrition as well as a growing consumer understanding of the link between diet and health.

Functional food and nutraceutical activities

Description of firms

The results of the survey showed that there were an estimated 294 firms in Canada—ranging from small start-ups to multinationals—engaged in activities with functional foods and nutraceuticals in 2002. Ontario counted 75 of these firms, Quebec and British Columbia

2. Health Canada. 1998. "Nutraceuticals/functional foods and health claims on foods." *Therapeutic Products Programme and the Food Directorate from the Health Protection Branch*
http://www.hc-sc.gc.ca/food-aliment/ns-sc/ne-en/health_claims-allegations_sante/e_nutra-funct_foods
(accessed on July 30, 2005).

3. Agriculture and Agri-Food Canada. 2002. "The functional food and nutraceutical industry: Innovation profile." *Innovation in Canada*.
<http://innovation.ic.gc.ca/gol/innovation/site.nsf/en/in02585.html> (accessed July 30, 2005).

had 72 each, and Saskatchewan had 33^{E4}. The remaining firms were distributed throughout the other provinces.

Small firms (fewer than 10 employees) accounted for 37% of the total number of firms participating in functional foods and nutraceuticals. Medium-sized firms (10 to 49 employees) accounted for 31% and large firms (50 or more employees) for 33%.

More firms were engaged in only nutraceutical activities (46%) than in only functional food activities (28%). Just over one-quarter of firms participated in both. Approximately 60% of small firms were engaged in just nutraceuticals. Medium-sized firms were engaged in either functional foods or nutraceuticals. Large firms were engaged in functional foods, or nutraceuticals, or both.

Some 40% of firms were involved in product development/scale up, over one-third manufactured of consumer ready products and over one-third conducted scientific research and development. Wholesaling was a more frequent activity for firms engaged in nutraceuticals (38%) than for those in functional foods (24%).

Table 1: Participation in functional food and nutraceutical activities, 2002

Activity	Firms that participate with functional foods	Firms that participate with nutraceuticals
Percentage of firms		
Product development/scale up of new products	41	40
Manufacturer of consumer ready products	37	34
Scientific research and development	34	36
Wholesaler of products	24	38
Manufacturer of ingredients	17	20
Retailer of products	13	18
Provide services (equipment, clinical testing, software) for the industry	3	7
Other	7	10

Note: Percentages do not add to 100 as respondents could choose multiple responses.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

Participation in functional food and nutraceutical activities

Of firms that produced, distributed or sold nutraceuticals, half (51%) dealt in plant-based nutraceuticals such as beta glucan from oats, antioxidants from blueberries and dried plant materials like echinacea and ginseng; 37% in marine-based nutraceuticals such as

4. The symbol *E* indicates a standard error of between 7.5% and 14.99% or a coefficient of variation (CV) between 15.00% and 29.99%. When the figure is not accompanied by a symbol, the standard error is less than 7.49% or the CV is less than 14.99%. Some data with a higher standard error or CV are precise enough for some purposes.

glucosamine and chitosan products from algae, seaweed and kelp; and 28% in animal or micro organism based nutraceuticals such as elk velvet, essential fatty acids, enzymes and carotenoids.

Among firms that were engaged in functional food activities, 44% added active ingredients to food, such as beta-glucan to muffins, and 14% used special production techniques, such as plant breeding methods, genetic modification and special livestock feeding. These techniques can produce, for example, tomatoes with enhanced lycopene levels, which has been shown to reduce the risk of prostate cancer; strawberries with increased levels of ellagic acid, which has been shown to reduce the risk of heart disease and certain cancers; and omega-3 eggs, which may reduce the risk for cardiovascular disease.

Table 2: Participation of firms, by type of functional food or nutraceutical, 2002

Type of functional food or nutraceutical	Percentage of firms
Nutraceuticals ground, dried, powdered and pressed from plant materials	51
Nutraceuticals extracted or purified from plants	45
Foods that have added active ingredients other than vitamins or minerals and have been scientifically demonstrated to provide health benefits beyond their basic nutritional functions	44
Nutraceuticals produced, extracted or purified from marine sources	37
Nutraceuticals that are produced, extracted or purified from animals and micro-organisms	28
Foods specially enhanced to contain more of a functional component, through plant breeding techniques, genetic modification, processing, or special livestock feeding techniques, that have been scientifically demonstrated to provide health benefits beyond their basic nutritional functions	14
Other	17

Note: Percentages do not add to 100 as respondents could choose multiple responses.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002.

Product lines

Functional foods and nutraceuticals have demonstrated physiological benefits or provide protection against chronic diseases.⁵ ‘General well being’ product lines generated the most revenue for 27% of respondents, and ‘vascular heart health’ product lines generated the most for 17% of firms.

While 15% of firms offered more than 50 product lines, two-thirds had fewer than 10. Some 57% of firms had product lines available for sale only in Canada and approximately one-

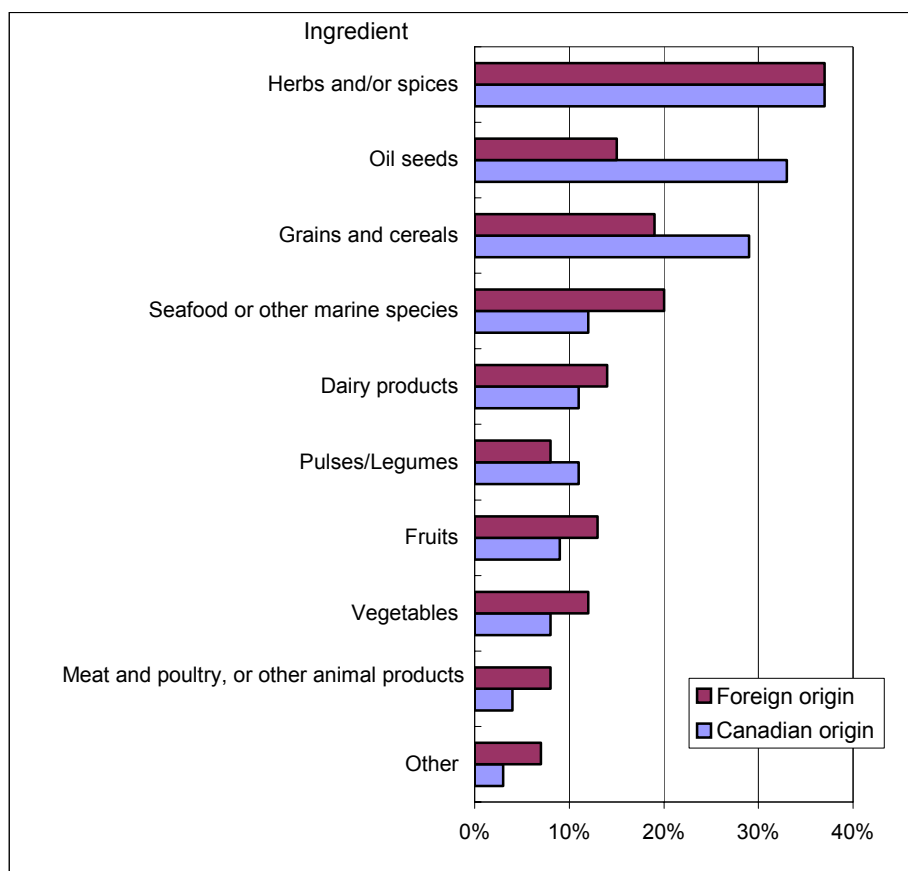
5. Health Canada. 1998. “Nutraceuticals/functional foods and health claims on foods.” *Therapeutic Products Programme and the Food Directorate of the Health Protection Branch*. (accessed July 30, 2005).

third of firms offered fewer than 10 product lines for sale only in Canada. One-quarter of firms sold products for export only.

Ingredients sourced in Canada and abroad

Of firms that used functional food or nutraceutical ingredients, 37% used herbs and/or spices from imported sources. The same percentage of firms used herbs and/or spices from domestic sources. About twice as many firms used domestic oilseeds as used foreign oilseeds. Seafood/marine species and grains/cereals were the next most frequently imported ingredients.

Chart 1: Source of ingredients, 2002



Note: These results are only for those firms that use functional food or nutraceutical ingredients.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

Distribution of products

Firms used more than one method to distribute functional food and nutraceutical products. Wholesalers were used by 61% of firms, broker or third party distributors by 45%, retailers by 40%, direct sales to final consumers by 39%, Internet sales by 28%, mail orders by 19%, and multilevel marketing / network marketing by 7%.

Exporting products

More than half (57%) of the firms surveyed indicated that they exported their functional food and nutraceutical products. One-quarter of firms sold products for export only.

Export sales/revenues

Over one-third of firms had more than \$1 million in total export revenues in 2002. Functional food and nutraceutical products contributed more than \$1 million to export revenues for 29% of firms.

Table 3: Total export revenues and total functional food and nutraceutical export revenues, 2002

Revenues	Total export revenues	Functional food and nutraceutical export revenues
Percentage of firms		
less than \$10,000	8	8
\$10,000 to \$99,000	13	19
\$100,000 to \$499,000	25	27
\$500,000 to \$999,999	18	16
\$1,000,000 to \$4,999,999	22	18
\$5,000,000 or greater	14	11

*Note: This question was asked only of firms that indicated that they export functional food and/or nutraceutical products.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

Export destinations

Functional foods and nutraceutical products were exported to a wide variety of destinations—the United States, Japan, Europe, Asia, and Australia and New Zealand.

Table 4: Countries or regions where functional foods and nutraceuticals were exported, 2002

Country or region	Percentage of firms
United States	77
Japan	23
North and/or South Korea	17
Taiwan	16
Australia and/or New Zealand	15
Hong Kong	12
China	11
United Kingdom	11
Germany	9
Italy	7
Belgium	7
Middle East (excluding Israel)	6
Israel	6
France	6
Mexico	6
Malaysia	5
Switzerland	5
Singapore	4
Czech Republic	4
Philippines	4
Norway	4
Spain	3
Caribbean	2
Other Europe	19
Other	8

*Notes:

This question was asked only of firms that indicated that they export functional food and/or nutraceutical products.

Respondents were asked to provide country of export; however, as a significant proportion responded 'Europe', this region is included in the 'Other Europe' category.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

In 2002, firms indicated interest in pursuing new markets in China, Japan, and Europe within the next two years. China may be of great interest for functional food and nutraceutical exporters because, between 1995 and 2003, Canada's overall exports to China rose 37% and our imports from China quadrupled. In 1995, Canada's trade deficit with

China was \$1.2 billion; by 2003, it was nearly \$13.8 billion. Canada, as a large net exporter of resources, has benefited from this surge in demand.⁶

Europe was the region of greatest interest for functional food and nutraceutical exports in 2003 and 2004, perhaps because firms were looking to expand existing European markets.

Table 5: Countries or regions of interest in 2002 for export of functional foods and nutraceuticals in 2003 and 2004

Country or region	Percentage of firms
China	19
Japan	16
United Kingdom	9
Australia and/or New Zealand	8
Mexico	8
Middle East	7
Germany	7
Taiwan	5
Hong Kong	5
Korea	4
Caribbean	3
Hungary	3
Singapore	2
United States	2
Other Europe	28
Other Asia	10
Other	5

*Notes:

This question was asked only of firms that indicated they export functional food and/or nutraceutical products.

Respondents were asked to provide country of export; however, as a significant proportion responded 'Europe' or 'Asia,' these regions have been included as 'Other Europe' and 'Other Asia'.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey-2002

Exported products

Of the exporting firms, over three-quarters (77%) exported finished products to be sold at the wholesale or retail level without further processing, and 44% exported raw materials to be used in functional foods and nutraceuticals. One-third exported semi-finished products to be further processed.

6. Statistics Canada. 2004. "Canada's trade with China." *The Daily*, Tuesday June 8, 2004. <http://www.statcan.ca/Daily/English/040608/d040608a.htm> (accessed July 30, 2005).

Table 6: Exported functional food and nutraceutical products, 2002

Products	Percentage of firms
Finished functional foods/nutraceuticals to be sold at wholesale or retail level without further processing	77
Raw material/ingredients to be used in functional foods/nutraceuticals	44
Semi-finished functional foods/nutraceuticals to be further processed before sale	33
Technology pertaining to the production of functional foods/nutraceuticals	8
Other	2

Note: This question was asked only of firms that indicated they export functional foods and/or nutraceutical products.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002.

Business practices

Ownership

Almost 75% of firms were private corporations, 11% were multi-nationals, 10% were public corporations, and 8% were sole proprietorships. For 86% of firms, the majority of ownership was Canadian; the remaining firms were foreign owned. None were Crown corporations.

Table 7: Ownership structure of firms engaged in functional food and nutraceutical activities, 2002

Ownership structure	Percentage of firms
Private corporation	74
Multi national	11
Public corporation	10
Sole proprietorship	8
Unincorporated partnership	1
Other	3

Note: Percentages do not add to 100 as respondents could choose multiple responses.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002.

Partnerships

While 38% of firms were involved in a partnership in 2002, half indicated that they were seeking new partnerships. Partnerships were formed to conduct scientific research and development, production/manufacturing and to access markets/distribution channels.

Table 8: Reasons for forming partnerships, 2002

Purpose of partnership	Percentage of firms
To conduct scientific research and development	73
Production/manufacturing	58
Access markets/distribution channels	57
Access to intellectual property of partner	32
Regulatory affairs	19
Access capital	14
Access others' patents	6
Other	2

Notes:

Percentages do not add to 100 as respondents could choose multiple responses.

This question was asked only of firms that indicated that they are involved in partnership arrangements.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

Almost 7 in 10 firms partnered with Canadian based organizations, and almost half partnered with American based organizations. Just over one-third partnered with other foreign based companies.

Contracting out

Almost 4 in 10 firms contracted out functional food and nutraceutical related activities in 2002. Activities contracted out ranged from manufacturing/production (70%) and scientific research and development (51%) to market research (19%) and technical/engineering (16%).

Table 9: Contracting out of functional food and nutraceutical related activities, 2002

Reason for contracting out	Percentage of firms
Manufacturing/production	70
Scientific research and development	51
Sales/marketing	30
Clinical	24
Regulatory/intellectual property	19
Market research	19
Technical/engineering	16
Other	2

*Note: Percentages do not add to 100 as respondents could choose multiple responses.

This question was asked only of firms that indicated they had contracted out in 2002.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002.

Raising capital

More than two-thirds of firms did not attempt to raise any capital in 2002. Of those that attempted to raise capital, 65% were successful. However, almost 60% had been limited or refused a request for capital during 2002. Since firms received capital from more than one source, they may have tried to raise money until all sources were exhausted. Reasons cited by firms for the limitation or refusal of capital included the following:

- capital not available due to market conditions
- functional food and nutraceutical product line was limited in scope
- functional food and nutraceutical products and processes not sufficiently developed
- further product development or proof of concept required
- lender does not fund development products
- lack of intellectual property
- failure to meet lending criteria
- lack of evidence to support projections

Half of all firms were funded by conventional sources, such as banks and initial public offerings (IPOs). Other sources included Canadian based venture capital, angel investors or family, and government sources.

Table 10: Sources of raised capital, 2002

Sources	Percentage of firms
Conventional sources (banks, IPOs)	50
Canadian based venture capital	34
Government sources	33
Angel investors/family	31
Partner from strategic alliances	18
American based venture capital	5
Other foreign based venture capital	4
Other	6

*Notes:

Percentages do not add to 100 as respondents could choose multiple responses.

This question applied to those firms that successfully raised capital.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002.

Most firms raised under \$1 million in capital and about half raised their targeted amounts.

Table 11: Capital raised, 2002

Capital amount raised	Percentage of firms
Less than \$50,000	17 ^E
\$50,000–\$99,999	15 ^E
\$100,000–\$499,999	18 ^E
\$500,000–\$999,999	26 ^E
\$1,000,000–\$1,999,999	9 ^E
\$2,000,000 or more	15 ^E

Note: This question was asked only of firms that raised capital for functional food and nutraceutical related activities.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

The most common reasons cited for raising funds were to conduct scientific research and development, to develop or expand production and manufacturing capability, and to expand in existing markets or enter new markets.

Table 12: Purpose for raising or attempting to raise capital, 2002

Purpose	Percentage of firms
Develop or expand production and manufacturing capability	63
Scientific research and development purposes	62
To expand in existing or enter into new markets	61
Commercialize current R&D projects	44
Clinical/regulatory expenses	30
Repay current investors	19
Other	3

Notes:

Percentages do not add to 100 as respondents could choose multiple responses.

This question applied to those firms that successfully raised capital.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

Intellectual property

A minority of firms received intellectual property rights from another firm (17%) or granted licensing agreements (7%) in 2002. However, almost 40% of firms developed trade secrets and 30% registered trademarks. About 17% had functional food and nutraceutical related patents or pending patents in 2002.

Research and development

Some 36% of firms participated in scientific research and development of nutraceuticals and 34% participated in scientific research and development of functional foods.

According to AAFC, Canadian companies have embraced research through innovative technologies to develop and enhance value-added constituents from both plants and animals. The food and food ingredient sector is a very important part of the Canadian nutrition industry.

Canada has developed an industrial capacity in enhancing the nutritive value and functional properties of crops as well as in value-added processing and extracting nutritionally valuable constituents. For example, Canadian companies have developed specialized fractionation technologies for the processing of raw materials such as legumes, flax, soy, oats and other cereals into starch, protein and fibre.

Canadian companies and researchers specializing in the standardization of herb and plant extracts have developed extraction, isolation, and purification expertise to manufacture herbal products to pharmaceutical standards. Companies have refined analytical methods to verify the potency and bio-activity of herbal extracts and other compounds. Canadian companies have also developed technologies and expertise in the extraction, characterization, stabilization, modification, and enhancement of the flavonoid constituents of fruits.

Impact of regulations

Health Canada has jurisdiction over functional food and nutraceutical product regulations, and the Canadian Food Inspection Agency enforces these regulations. In 2003, Health Canada approved five generic health claims pertaining to the following:

- sodium, potassium and hypertension
- calcium, vitamin D and osteoporosis
- saturated fat, trans fat and heart disease
- vegetables and fruits and some types of cancers
- sugar alcohols and dental caries.

In 2002, over 60% of all firms believed that the ability to use claims about reducing the risk of diseases, generic health claims, and structure and function specific claims would have a positive impact on their domestic sales, their export sales and their ability to compete globally. If firms could make these types of claims, over half believed that they might be willing to conduct research to support them.

Currently, Canada and the United States have different compositional and labelling requirements. Firms indicated that changing compositional and labelling regulations to match the US standards would positively impact about half of all firms' domestic and export sales as well as their ability to compete globally. About 40% of firms stated that they would be willing to conduct research to support health claims if the labelling regulations were changed while 32% of firms said that this would have no impact on them.

Table 13: Firms' perceptions of how changing compositional and labelling regulations to match U.S. standards would impact areas of business, 2002

Business area	Perceived impact						
	Very negative	Somewhat negative	No impact	Somewhat positive	Very positive	Don't know	Not Applicable
	Percentage of firms						
Domestic sales	3	6	17	22	34	14	3
Export sales	1	4	17	19	31	18	10
Willingness to conduct research to support health claims	1	3	32	16	23	18	8
Ability to compete with global competitors	1	4	17	22	29	19	8

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

Human Resources

More than one-third of firms that engaged in functional food and nutraceutical activities had fewer than 10 employees (small firms), almost one-third had from 10 to 49 employees (medium firms) and one-third had 50 employees or more (large firms).

Table 14: Firms with employees who participate in functional food and nutraceutical related activities, by firm size, 2002

Employees	All firms engaging in functional food and nutraceutical activities	Firms with employees who have functional food and nutraceutical related duties
	Percentage of firms	
Fewer than 10	37	55
10-24	21	27
25-49	10	5
50-99	12	6
100-199	6	2
200-299	2	1
300-499	5	3
500-999	4	1
1000 or more	3	1

Note: Firms reported highest employment level for 2002.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002.

Most companies devoted only a portion of their staff to functional food and nutraceutical activities. More than half of all firms had fewer than 10 employees devoting any time to functional food and nutraceutical related activities and about 5% had more than 300 employees working directly with functional food and nutraceuticals. Another one-quarter had from 10 to 24 employees involved in functional food and nutraceutical activities.

Nearly one-quarter of firms had unfilled functional food and nutraceutical positions. The greatest competency needed was in sales/marketing/advertising. Other required competencies included scientific research and development, production, and quality control. Half of functional foods and nutraceutical firms stated that they did not have sufficient capital or resources to attract candidates. Over one-third of firms stated that candidates lacked the expertise required, one-quarter reported that candidates wanted compensation that was too high and another one-quarter reported that candidates were unwilling to relocate.

Table 15: Human resource competencies needed for unfilled functional food and nutraceutical positions, 2002

Competencies needed	Percentage of firms
Sales/marketing/advertising	70
Scientific research and development	46
Production	45
Quality control	38
Regulatory/intellectual property	35
Technical/engineering	26
Business development	23
Management/finance	20
Clinical affairs	10
Other	4

Note: Percentages do not add to 100 as respondents could choose multiple responses.

Source: Statistics Canada, The Functional Foods and Nutraceuticals Survey - 2002

Possible consequences of not being able to hire employees included developing partnerships, contracting out, and raising capital to fulfill a firm's needs for marketing and sales, research and development, and manufacturing.

Challenges for the future

The Functional Foods and Nutraceuticals Survey has provided first-ever information on the size and structure of Canadian firms engaged in activities related to functional foods and nutraceuticals, an emerging part of Canada's food sector. These firms have the potential to expand, and further research is needed to document the trends and growth by categories. These results will serve to guide future policy and investment decisions related to functional food and nutraceutical products.

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Methodology

Survey population

AAFC provided Statistics Canada's Small Business and Special Surveys Division with a list of firms involved in activities related to functional foods and nutraceuticals. Statistics Canada's Science, Innovation and Electronic Information Division provided a list of companies that had indicated in the 2001 Canadian Biotechnology Survey that they were involved in functional food and/or nutraceutical related activities. These two lists were merged and duplicate units were identified. The final sample size for the survey was 576 firms.

Responding to this survey is voluntary. Data are collected directly from survey respondents.

The response rate for this survey was 48%.

Sampling

From 576 potential in-scope respondents, the survey had 276 responding questionnaires. A total of 147 of these respondents indicated involvement in functional food and nutraceutical activities. The remaining questionnaires were a mix of non-respondents, company deaths and out-of-scope businesses.

Data quality and Standard error

The standard error is a commonly used statistical measure indicating the sampling error of an estimate. The standard error and the coefficient of variation (standard error expressed as a percentage of the estimate) were used in the tables to provide an indication of the level of data quality of the estimate.

The symbol ^E indicates a standard error of between 7.50% and 14.99% or a coefficient of variation (CV) between 15.00% and 29.99%. Some data with a higher standard error or CV are precise enough for some purposes; however one should proceed with caution.

Reliable figures were not obtained through this survey for total sales, sales from functional foods and nutraceuticals, sales revenues, total spending on scientific research and development and total spending on functional food and nutraceutical research and development. As many respondents did not complete these questions, the standard error was too high for the numbers to be published.

Catalogued publications

Statistical publication

- 88-202-XIE Industrial Research and Development, 2004 Intentions (with 2003 preliminary estimates and 2002 actual expenditures)
- 88-204-XIE Federal Scientific Activities, 2003-2004^e (annual)
- 88-001-XIE Science Statistics (monthly)

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