

A Note on the Economic Rationale for Regulating Health Claims on Functional Foods and Nutraceuticals: The Case of Canada

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Introduction

Regulating health claims continues to be among the highly contentious regulatory challenges involving functional foods, nutraceuticals and, more broadly, natural health products.¹ The potential effects of regulations on health claims are multifaceted, and a substantial body of literature has recently emerged examining impacts on innovation/product commercialization, marketing/advertising, promotion of healthy consumption patterns and international competitiveness.² We aim here to give an overview of the economic rationale for regulation of health claims, hopefully in a manner that is accessible to both an audience of economists and non-economists.

The premise of regulating health claims is to remedy market failures arising from imperfect information in food markets.³ Proponents of health claim regulations solicit greater regulatory intervention and, at the extreme, near prohibition of health claims. They argue that incentives are rampant for manufacturers to deceive and/or mislead consumers because claimed health effects cannot be easily verified by consumers,⁴ providing scope for 'false' product differentiation. In contrast, opponents of such restrictive regulations on

health claims have argued that direct information provision through product labels is an effective approach to informing consumers about potential positive health effects that could not be acquired through pre-consumption information-seeking or post-consumption experience.⁵ Further, opponents of regulations argue that, by restricting the provision of information through health claims, consumers are 'kept in the dark' and that the consequent welfare losses to consumers are typically much greater than the potential costs associated with deception.⁶ Indeed, there is a substantial body of evidence supporting the notion that provision of information on health effects through product labels not only brings about positive changes in consumer dietary choices,⁷ but also intensifies market competition among manufacturers for the supply and disclosure of valued product attributes, in turn enhancing consumer choices.⁸

We contend that both sides of the debate on regulating health claims are centered around, to a large extent, the degree of consumer verifiability of the claimed deliverables, in terms of health effects of product consumption, and that the extant literature tends to gloss over this important aspect.⁹ The purpose of this conceptual note is to bridge this gap in the health claim regulations literature. Our arguments



and reasoning are borrowed from the literature on the economics of advertisements as information,¹⁰ where claims on product attributes have been examined in terms of their ability to provide truthful and verifiable information to consumers, and in terms of the role of market forces when information verifiability varies across product attributes. We tailor our analysis to view health claims through the lens of information economics and conclude by outlining the potential remedies for certain information failures through the regulation of health claims. In particular, we highlight the potential role of biomarkers that are used to assess disease risk reductions as a remedy for informational failures. Verifiable and authenticated information on such biomarkers related to long term health effects of functional foods and nutraceuticals could be used to remedy the informational failures. The information requirements for this transformation can be considered a public good and, thus, public provision and authentication of such information becomes the *prima facie* case for regulation of health claims.

Regulation of Health Claims¹¹

The Codex Alimentarius Commission has proposed a health claim as “any claim establishing a relation between a food or a constituent of that food and health, (whether it is good health or a condition related to health (or disease)) ... or ... any claim which suggests that food has an impact on health.”¹² In most countries such claims are highly regulated and closely associated with controls on advertising.¹³ The general premise of regulating health claims is to prevent the public from being misled through communication of erroneous information.¹⁴

In 1984, the Kellogg Company in the United States initiated the modern era of food product health claims,¹⁵ soon followed by the rapid proliferation of health claims by food manufacturers. In due course this led to the promulgation of the *Nutrition Labelling and Education Act of 1990*,¹⁶ mandating regulatory approval for health claims through the US Food and Drugs Administration (FDA).¹⁷ Other countries and regions have subsequently implemented regulations of health claims, including the European Union and Canada.

Until relatively recently, regulation of health claims in Canada was undertaken under more general provisions related to advertising of foods. Section 2 of the *Food and Drugs Act*¹⁸ defines advertisement as “any representation by any means whatever for the purpose of promoting directly or

indirectly the sale or disposal of any food, drug, cosmetic or device.” The definition of a label is “any legend, word, or mark attached to, included in, belonging to or accompanying any food, drug, cosmetic or device or package.”¹⁹ Sections 3 and 5 of the *Food and Drugs Act* establish requirements for food advertising. For example, section 5 (1) declares that no person shall advertise “any food in a manner that is false, misleading, or deceptive or is likely to create an erroneous impression regarding its character, value, quantity, composition, merit or safety.” Canadian courts have interpreted this provision as imposing a strict liability offence which is subject to a defence of due diligence.²⁰ Section 3 of the *Act* prohibits product-specific disease risk reduction claims: “no person shall advertise any food, drug, cosmetic or device to the general public as a treatment, preventative or cure for any of the diseases, disorders or abnormal physical states referred to in Schedule A.”²¹

Moves towards specific regulation of health claims in Canada began in 1998 when Health Canada published a *Policy Paper on Nutraceuticals/Functional Foods and Health Claims on Food*,²² proposing the use of generic health claims similar to those allowed in the United States. The *Food and Drugs Act* was subsequently amended in 2003 to permit five generic health claims.²³ Generic health claims are applied to specific food groups (for example fruits and vegetables) or particular foods that have a specific compositional characteristic (such as fibre) and/or a specific nutrition (such as potassium).²⁴ These claims, once authorized, can be used on any food product that fits the specified conditions and has the required composition without further scrutiny by Health Canada. However, such claims cannot make reference to a specific food product.²⁵ Currently, product-specific disease risk reduction claims or product-specific biological role claims are allowed only as “therapeutic claims” that do not make references to any diseases or physiological states listed in Schedule A of the *Food and Drug Act*, including the majority of diet-related diseases.

Economic Rationale for Regulating Health Claims

In a fundamental sense, health claims represent information provided to consumers via product labels and advertising by sellers whose primary objective is to sell more of their product.²⁶ In general, economists are in agreement that the free flow of truthful and verifiable information facilitates the convergence of the value of resources used in the production



process to the value placed by consumers on the benefits of consuming the associated product, leading to efficient resource allocation in an economy.²⁷ However, economists are also attentive to the fact that the free flow of truthful and verifiable information is neither the norm nor the likely objective of sellers who are looking for ways to sell more of their product.

Economists carefully examine situations in which the sellers' desire to sell more of their product may jeopardize the free flow of truthful and verifiable information, in extreme cases leading to the notorious market for "lemons" whereby poor quality products drive out good quality products.²⁸ Economists have asserted that the origin of early food regulations was closely linked to this "lemons" problem due to the adulteration and misbranding of food products.²⁹ The possibility of misleading consumers by claiming benefits that are, at best, doubtful and, at worst, simply non-existent provides a *prima facie* case for regulatory intervention to control the information that is permitted in advertisements and/or on labels. However, the role of market forces, manifested through consumers' ability to assimilate information from commercial sources (e.g., advertising and labels) and word of mouth, as well as their own experiences with the product, must be carefully examined to identify whether the provision of misleading information is economically sustainable, and thus a major concern for regulators, or a short-term phenomenon that will naturally correct itself over time.

Economics of Advertising as Information - Attributes of Goods and Information

Food manufacturers have little or no incentives to innovate and commercialize products with health benefits that are potentially attractive to consumers unless they are able to communicate such benefits to consumers in an effective manner. Misleading consumers about a product to promote sales will not be sustainable if consumers can easily detect

the characteristics of the product and thus are able to discipline sellers who indulge in misinformation. Information economists, especially those who study advertising as information, have categorized product attributes (or claims on product attributes) based on the degree of verifiability by buyers,³⁰ namely search, experience and credence characteristics.

Search attributes are claimed deliverables for which full information is acquired prior to purchase of the product; the

colour of a product is a simple example. Consumers can accurately assess whether a good possesses the level of an attribute claimed in advertising or on labels with relatively little effort. **Experience attributes** are claimed deliverables that cannot be verified until after purchase and use of the product; for example, taste or some acute health effects. After consumers "experience" the attribute they can verify whether the claim is true. Finally, **credence attributes** are claimed deliverables that cannot be easily verified even after purchase and consumption;

long-term health effects are an example.

Consumers exercise market power by withholding initial purchase when they detect a search attribute claim is untrue or by withholding repeat purchase when an experience attribute claim is discovered to be false.³¹ The ability of consumers to verify such claims is arguably a more important disciplinary tool for firms to not make misleading or untrue claims than regulatory compulsion.³² Indulgence in misleading claims is more likely in the case of credence attributes, including long-term health effects, where verification imposes the greatest effort and/or cost on consumers.³³

The cost and/or effort for consumers of verifying and assimilating a claim increases from search through experience to credence characteristics. At the same time, however, the cost for sellers of supplying information is lowest for search characteristics and greatest for credence characteristics. For example, manufacturers typically face the greatest difficulty in conveying truthful and easily understandable information about credence attributes, which are not susceptible to consumer verification by pre- or post-consumption search.

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Indeed, manufacturers may seek to transform experience or credence characteristics such as long-term health benefits, into search attributes, thereby lowering the consumer's effort/cost in verifying the claim and encouraging purchase. For example, Phillip Nelson asserts that manufacturers tend to advertise experience attributes in order to educate consumers about the existence of the functions of a product, which is a more cost-effective way for consumers to compare brands than their own individual search efforts.³⁴ Indeed, mandatory disclosure of nutrient information³⁵ acts to transform largely credence attributes into search attributes, thereby lowering the otherwise great cost to consumers of information assimilation. It is evident, therefore, that regulation of health claims may provide benefits for both consumers and producers as described in Box 1.

Consumers make efforts to establish a desired level of information accuracy for the claims on experience and credence attributes that could directly affect the probability of expected health outcomes.

There are corresponding costs and benefits for such verification efforts as given in Figure 1 (see Box 1 for more details). The marginal cost and the marginal benefit lines indicate the addition or increment to the total costs and total benefits as effort level increases. For example, successive units of effort add a successively smaller increment to the total benefits as indicated by downward sloping marginal benefit lines. At the effort level of E_{max} no incremental benefit is accruable to the total benefits, thus verification efforts exceeding the point E_{max} are futile. In contrast, as indicated by the upward sloping marginal cost lines, successive units of effort add a successively higher increment to the total costs.

If the marginal benefit is greater than the marginal cost at a given level of effort, by increasing the efforts consumers could gain since their incremental benefits would be greater than incremental costs. The reverse holds if the marginal cost is greater than the marginal benefit at a given level of effort and by decreasing the efforts a consumer could gain. It is evident therefore that a rational consumer makes verification efforts up to a point where the incremental (marginal)

cost is equal to the incremental (marginal) benefit from the last unit of verification effort. These optimal levels of verification effort for an experience attribute (E^*_E) and credence attribute (E^*_C) are shown in Figure 1. At this optimal level of verification efforts, the total benefits of verifying the credence attribute is the summation of incremental benefits as the verification effort increases from zero units of effort to E^*_C units of effort. This summation is represented by the area of OAB E^*_C . Likewise, the total cost of verifying the credence attribute is the area of OB E^*_C . Thus the net

benefit (total benefit minus total cost) of verifying the credence attribute is the triangle of OAB. If the consumer holds E^*_C constant, any reduction in the cost of verifying a credence attribute (that reduces the slope of the line $\delta C_C/\delta E$), for example through the action of the manufacturer in terms of product claims that transform a credence attribute into an experience attribute, would increase this net gain (ΔOAB) to the incremental maximum of ΔOBC . If the cost to the manufacturer of providing this information, including verification

and supply, is less than the consumer's gain, the action is socially desirable. There is only a case for government regulation here if sellers are not able to capture enough of the benefit to consumers (e.g., through higher prices) to cover their costs and thus have an economic incentive to provide such information.

One of the crucial steps in the transformation of credence attributes to experience or search attributes is the provision of reliable information that is verifiable, such that there is protection against misleading claims. While there may be a role for government here in establishing criteria that govern health claims, there may also be other market-based mechanisms that can verify if claims are reliable. For example, if a product's credence attribute is the potential lowering of blood cholesterol, a manufacturer may provide the results of independent scientific research or offer blood cholesterol testing services to consumers. Indeed, if the credence attribute relates to changes in any biomarker, such as blood pressure, bone density or body weight, the impact of the product is ultimately verifiable, everything else being equal, and thus would become an experience characteristic. This then

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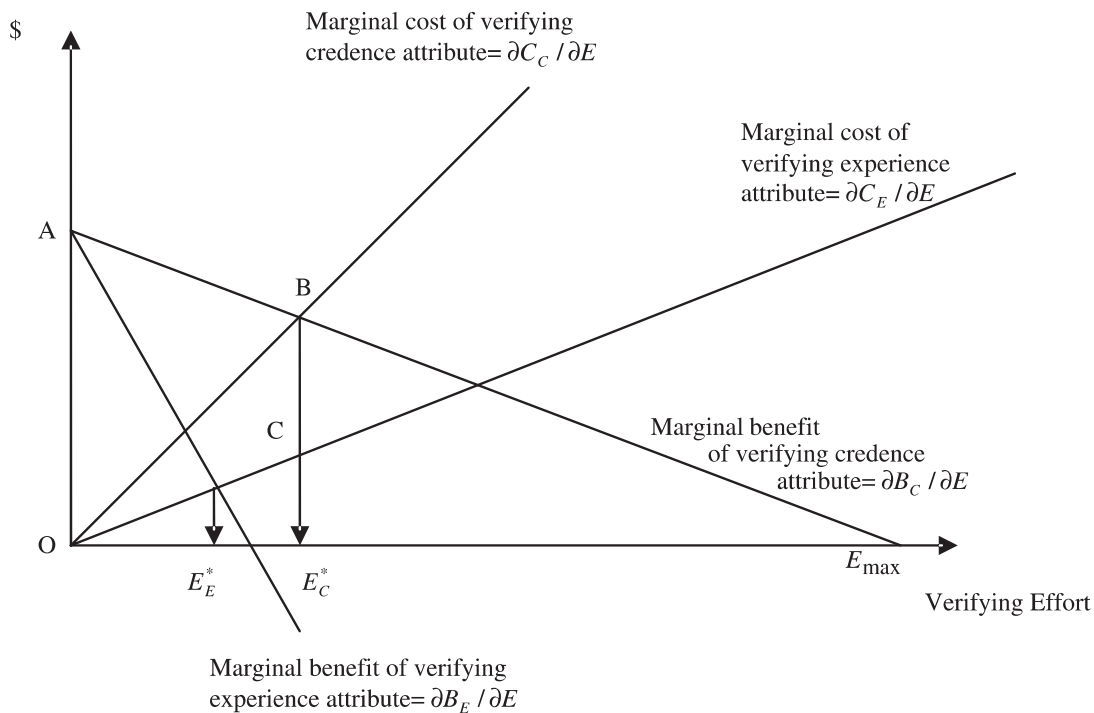


Figure 1. Marginal benefits and costs of verifying experience and credence attributes:

returns to an issue of the costs of verification and to whom these accrue.

The informational remedy for converting a credence attribute to an experience attribute, for example through testing services is, *a priori*, plausible. If the health effects related to a particular credence attribute are applicable to the general public rather than a relatively small ‘at risk’ group, the information needed to transform that attribute into an experience attribute becomes a public good. In such situations, provision of information is most cost effective through public modes of health claim substantiation and verification than by individual sellers and/or buyers. This perhaps supports current approaches to the substantiation of health claims through significant scientific agreement. However, from an economics of information perspective, if the public good nature of the information needed to transform a credence attribute to an experience attribute is relatively small (e.g., with a relatively small group of consumers who stand to benefit) and/or where individual consumer verification is relatively straightforward (e.g., weight control claims), public authentication of health claims may not be warranted.

Conclusions

This paper has described how health claims can be conceptualized as a credence attribute associated with the longer term health outcomes from consuming functional foods, nutraceuticals and/or natural health products. The desire for manufacturers to promote sales of their products by informing consumers about such credence attributes is confounded by regulatory controls on advertising and products labelling, including the scope to make health claims, and by the inability of consumers to verify claims that are made through either pre- or post-consumption search. A plausible market-based mechanism is the transformation of credence attributes to experience or search attributes at the level of the individual consumer, for example through monitoring of biomarkers. Indeed, developments in scientific understanding of biomarkers is, at least in principle, making the longer term health effects of functional foods, nutraceuticals and/or natural health products into experience attributes. However, if the associated potential health benefits are applicable to the wider population rather than relatively small ‘at risk’ groups, such information can be considered a public good



that is more efficiently provided in a collective manner through government action. This suggests, perhaps, a new role for government in this sphere, in providing verified information on the potential health effects of products that are applicable to the wider population rather than simply regulating the claims made by manufacturers.

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1. See e.g. Paul F. Hopper, "To Claim or Not To Claim – That is the Question" (1986) 41 Food, Drug, Cosmetic Law Journal 80; A. L. Forbes, "Dimensions of the is-

sue of explicit health claims on food labels" (1986) 43 American Journal of Clinical Nutrition 629; John E. Calfee & Janis K. Pappalardo, "Public Policy Issues in Health Claims for Foods" (1991) 10:1 Journal of Public Policy & Marketing 33 [Public Policy Issues]; Constance J. Geiger, "Health claims: history, current regulatory status, and consumer research" (1998) 98 Journal of the American Diabetic Association 1312; Mark Lawrence & Mike Rayner, "Functional foods and health claims: A public health policy perspective" (1998) 1 Public Health Nutrition 75; Corinna Hawkes, *Nutrition labels and health claims: the global regulatory environment* (Geneva: World Health Organization, 2004) [Hawkes]; Ilene Ringel Heller, "Functional Foods: Regulatory and Marketing Developments" (2001) 56 Food & Drug L.J. 197; Martijn B. Katan & Nicole M. De Roos, "Promises and Problems

Suppose a consumer has a value of V for a desirable health outcome (e.g., a lower risk of coronary heart disease). To realize V , the consumer must achieve various lifelong accomplishments such as maintaining a healthy level of blood cholesterol (H).³⁶ All else being equal (including all other risk factors), the probability of accomplishing H [denoted by $P(H)$], depends on food consumption choices based on the awareness of associations between particular nutrients and health. No doubt this awareness is manifested through the consumer's efforts to verify the various product attributes in their consumption basket.³⁷ Assume a product with one credence attribute (for example potential impacts on levels of blood cholesterol) and one experience attribute (for example certain elements of fat content) that are directly related to H ,³⁸ for model simplicity we ignore any search attributes of the product. The consumer exerts E_c level of verification effort for credence attributes and E_e level of verification effort for experience attributes. Such efforts condition $P(H)$. Thus, $P(H|E_c, E_e)$ corresponds to the conditional probability of accomplishing H with a given level of E_c and E_e , and everything else being equal, the expected value of life with a specific lower risk of coronary heart disease would be $V * P(H|E_c, E_e)$. We assume that increasing efforts directed at the verification of credence and experience attributes will increase this expected value at a decreasing rate, that is increasing the level of verification effort has a diminishing return in terms of the level of the conditional probability.

Health claims are almost invariably applied where the most important attribute that consumers are striving to verify is a credence characteristic.³⁹ Thus, we assume that increases in E_c correspond to a monotonously greater increase in $V * P(H|E_c, E_e)$ relative to an increase in E_e . That is, the marginal benefits of verification efforts for credence attributes are monotonously greater than those of experience attributes across all effort levels. Suppose the costs of verifying credence and experience attributes are given by $C_c(E_c)$ and $C_e(E_e)$ respectively, where both cost functions increase at an increasing rate with the level of effort and the marginal costs of verifying credence attributes are monotonously greater than those of verifying experience attributes across all effort levels.⁴⁰ That is, $\delta C_c(E_c)/\delta E_c > \delta C_e(E_e)/\delta E_e$.⁴¹ The optimal level of verification effort for an experience attribute (E_e^*) and credence attribute (E_c^*) is determined by maximizing the expected value of V subject to the costs of verification efforts where the marginal benefit of verification equals the marginal cost of verification,⁴² as shown in Figure 1. At the equilibrium level of verification effort, the total net gain to the consumer from verifying credence attribute is ΔOAB .



- of Functional Foods” (2004) 44 *Critical Reviews in Food Science and Nutrition* 369.
2. On innovation and product commercialization, see A.M. Stephen, “Regulatory Aspects of Functional Products” in G. Mazza, ed., *Functional Foods, Biochemical and Processing Aspects* (Lancaster, Penn.: Technomic Publishing Company, 1998) 403; Kathie L. Wrick, “The Impact of Regulation on the Business of Nutraceuticals in the United States: Yesterday, Today and Tomorrow” in Clare M. Hasler, ed., *Regulation of Functional Foods and Nutraceuticals: A Global Perspective* (Ames, Iowa: Blackwell Publishing, 2005) 3; D. Richardson, “Scientific and regulatory issues about foods which claim to have a positive effect on health” in Michele J. Sadler & Michael Saltmarsh, eds., *Functional Foods: The Consumer, The Products, The Evidence* (London: Royal Society of Chemistry, 1998); Gary Gnriss, “Innovation versus regulation” (October 2004) *Food in Canada* 20; Ronald L. Doering, “A Duty to Do it Well: Regulations and Food Industry Competitiveness and Innovation Under the *Food and Drugs Act*” (2005) [unpublished, archived at Gowling Lafleur Henderson LLP, Ottawa]. On marketing and advertising, see Alison M. Stephen *et al.*, “Regulation of foods with health claims: A proposal” (2002) 93 *Canadian Journal of Public Health* 328; D. Gorman, “Health Canada’s regulatory initiative regarding foods with health claims” (2002) 93 *Canadian Journal of Public Health* 325; Kelley Fitzpatrick, “Regulatory Issues Related to Functional Foods and Natural Health Products in Canada” in Clare M. Hasler, ed., *Regulation of Functional Foods and Nutraceuticals: A Global Perspective* (Ames, Iowa: Blackwell Publishing, 2005) 213; Health Canada, *Product-Specific Athorization of Health Claims for Foods: A Proposed Regulatory Framework* (Ottawa: Bureau of Nutritional Sciences, Food Directorate, Health Products and Food Branch, 2001); P.H. Jones & C. Bourque, “Health claims on foods in Canada: Toward successful implementation” (2003) 94 *Canadian Journal of Public Health* 260; Michele Veeman, “Policy Development for Novel Foods: Issues and Challenges for Functional Food” (2002) *Canadian Journal of Agricultural Economics* 527 [Veeman]; Cynthia Ramsay, “A Cure Worse than the Illness: Canada’s Proposed Regulatory Framework for Natural Health Products in Light of International Evidence” (2002) 55 *Public Policy Sources* 1, online: Fraser Institute <<http://www.fraserinstitute.ca/admin/books/files/CureWorsethantheIllness.pdf>>.
 3. See *e.g.* Alan Schwartz & Louis L. Wilde, “Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis” (1979) 127 *U. Pa. L. Rev.* 630; John E. Calfee & Janis K. Pappalardo, *How Should Health Claims For Foods Be Regulated? An Economic Perspective*, Bureau of Economics Issues Paper, Federal Trade Commission, United States (1989) [Calfee & Pappalardo, *How Should Health Claims For Foods Be Regulated*]; Paul H. Rubin, “Information Regulation (Including Regulation of Advertising)” in Boudewijn Bouckaert & Gerrit De Geerst, eds., *Encyclopedia of Law and Economics*, vol. 3 (Cheltenham: Edward Elger, 2000) 271.
 4. See *e.g.* W.T. Jarvis, “Food Faddism, Cultism, and Quackery” (1983) 3 *Annual Review of Nutrition* 35; Vicki S. Freimuth, Sharon L. Hammond & Judith A. Stein, “Health Advertising: Prevention for Profit” (1988) 78 *American Journal of Public Health* 577; Bruce A. Silverglade, “A Comment on ‘Public Policy Issues in Health Claims for Foods’” (1991) 10:1 *Journal of Public Policy and Marketing* 54; Bruce A. Silverglade & Ilene Ringel Heller, “Are Functional Foods the Solution to Dysfunctional Diets – A Review of U.S. Regulatory Requirements and Lessons From Abroad” (1997) 52 *Food & Drug L.J.* 313; International Association of Consumer Food Organizations, “Functional Foods: Public Health Boon or 21st Century Quackery? (1999), online: Center for Science in the Public Interest <http://www.cspinet.org/reports/functional_foods/index.html>; Chester S. Galloway, “The First Amendment and FTC Weight-loss Advertising Regulation” (2003) 37 *The Journal of Consumer Affairs* 413.
 5. See *e.g.* Public Policy Issues, *supra* note 1; Pauline M. Ippolito & Alan D. Mathios, “Information, Advertising and Health Choices: A Study of the Cereal Market” (1990) 21 *Rand Journal of Economics* 459 [Information, Advertising and Health Choices]; Pauline M. Ippolito & Alan D. Mathios, “The Regulation of Science-Based Claims in Advertising” (1990) 13 *Journal of Consumer Policy* 413 [The Regulation of Science-Based Claims]; Pauline M. Ippolito & Alan D. Mathios, “Health Claims in Food Marketing: Evidence on Knowledge and Behaviour in the Cereal Market” (1991) 10 *Journal of Public Policy and Marketing* 15 [Health Claims in Food Marketing]; Alison Keith, “Regulating Information About Aspirin and the Prevention of Heart Attack” (1995) 85:2 *American Economic Review* 96 [Keith].



6. See Calfee & Pappalardo, *How Should Health Claims For Foods Be Regulated*, *supra* note 3.
7. See e.g. Pauline M. Ippolito & Alan D. Mathios, "Information and Advertising: The Case of Fat Consumption in the United States" (1995) 85:2 *American Economic Review* 91, on the removal of the ban on health claims by the US Food and Drugs Administration in 1985, and the impact this had on changes in fat and saturated fat consumption. See also Information, Advertising and Health Choices, *supra* note 5 and Health Claims in Food Marketing, *supra* note 5, on the impact of allowing health claims on changes in the high fibre breakfast cereal consumption. See John C. Kozup, Elizabeth H. Creyer & Scot Burton, "Making Healthful Food Choices: The Influence of Health Claims and Nutrition Information on Consumers' Evaluation of Packaged Food Products and Restaurant Menu Items" (2003) 67:2 *Journal of Marketing* 19, on information provision and prepared meal purchasing behaviour in restaurants. See Keith, *supra* note 5, on the loss of opportunity for Aspirin to help prevent heart attacks due to prohibitions on direct information provision to consumers. See also Gary T. Ford *et al.*, "Can Consumers Interpret Nutrition Information in the Presence of a Health Claim? A Laboratory Investigation" (1996) 15 *Journal of Public Policy and Marketing* 16.
8. In "The Informational Role of Warranties and Private Disclosure about Product Quality" (1981) 24 *J.L. & Econ.* 461 [Informational Role], Sanford J. Grossman demonstrates that firms with a superior product characteristic which is valued by customers are likely to voluntarily highlight that attribute. If there is adequate competition among manufacturers of this particular characteristic along with some other beneficial characteristics, there will be a voluntary "unfolding" of information on such characteristics by competitors. Richard Posner has noted that manufacturers can improve their market share by highlighting and calling attention to negative attributes, and prompting that their own brand is a lesser evil. See Richard A. Posner, "The Federal Trade Commission's Mandated-Disclosure Program: A Critical Analysis" in Harvey Goldschmidt, ed., *Business Disclosure: Government's Need to Know* (New York: McGraw-Hill, 1979) 331. For an explanation of how this unfolding theory is manifest in the context of food health claims, see *The Regulation of Science-Based Claims*, *supra* note 5. See also Public Policy Issues, *supra* note 1.
9. Some discussion is provided on this aspect by Julie A. Caswell & Eliza M. Mojduszka, "Using Informational Labelling to Influence the Market for Quality in Food Products" (1996) 78 *American Journal of Agricultural Economics* 1248 [Caswell & Mojduszka]; Lorna Aldrich, *Consumer Use of Information: Implications for Food Policy*, Agricultural Handbook No. 715 (Washington D.C.: Food and Rural Economics Division, Economic Research Services, U.S. Department of Agriculture, 1999); Veeman, *supra* note 2.
10. For an accessible introduction, see Phillip Nelson, "The Economic Value of Advertising" in Yale Brozen, ed., *Advertising and Society* (New York: New York University Press, 1974) 43. See also Phillip Nelson, "Information and Consumer Behaviour" (1970) 78 *Journal of Political Economy* 311 [Information and Consumer Behaviour]; Phillip Nelson, "Advertising as Information" (1974) 82 *Journal of Political Economy* 729 [Advertising as Information]; Phillip Nelson, "The Economic Consequences of Advertising" (1975) 48 *Journal of Business* 213 [Economic Consequences]; Gary T. Ford, Darlene B. Smith & John L. Swasy, "An Empirical Test of the Search, Experience and Credence Attributes Framework" (1988) 15 *Advances in Consumer Research* 239; Manfred F. Maute & William R. Forrester Jr., "The effect of attribute qualities on consumer decision-making: a causal model of external information search" (1991) 12 *Journal of Economic Psychology* 643.
11. A claim can be a much broader representation than a mere statement. *The Study on Nutritional, Health and Ethical Claims in the European Union* (New York: Hill and Knowlton, 2000) at 25 provides a broader definition on claims:

A claim is any direct or indirect statement, symbol, suggestion, implication or any other form of communication (including the brand name) that a good has particular characteristics relating to its origin, properties, effect, nature, method of production, processing, composition or any other quality.

Different types of claims related to foods, nutritional supplements and natural health products can be broadly grouped into nutrition claims and health claims, albeit there are grey areas in-between these two groups. Nutrition claims in general deal with either nutrient content and/or their role in general body functions. In contrast, health claims deal with disease risk reductions and improvements in general health or managing or controlling specific disease conditions. In the literature, one finds two important sub-groups of nutrition claims, namely nutrient content claims and nutrient-related structure/function or biological



- role claims. Two important sub-groups of health claims are “generic” and “product-specific” disease risk reduction claims.
12. Joint FAO/WHO Food Standards Programme, Codex Alimentarius Commission, *Report of the Twenty-Seventh Session of the Codex Committee on Food Labelling*, ALINORM 99/22A, online: Food and Agriculture Organisation of the United Nations World Health Organization <ftp://ftp.fao.org/docrep/fao/meeting/005/X1919e/X1919e.pdf> at 48 (accessed 21 July 2006).
 13. For instance, the Codex Alimentarius Commission prohibits claims “as to the suitability of a food for use in the prevention, alleviation, treatment or cure of a disease, disorder, or particular physiological condition unless they are: (a) in accordance with the provisions of Codex standards or guidelines for foods under jurisdiction of the Committee on Foods for Special Dietary Uses and follow the principles set forth in these guidelines, or (b) in the absence of an applicable Codex standard or guideline, permitted under the laws of the country in which the food is distributed.” FAO/WHO Food Standards Programme, Codex Alimentarius Commission, *Codex Alimentarius: Food Labelling Complete Texts*, rev. ed., (2001), online: Food and Agriculture Organisation of the United Nations World Health Organization <ftp://ftp.fao.org/docrep/fao/005/Y2770E/Y2770E00.pdf> at 26 (accessed 21 July 2006) [Codex, 2001]. See also Hawkes, *supra* note 1.
 14. Codex General Guidelines on Claims assert that “The principle on which the guidelines are based is that no food should be described or presented in a manner that is false, misleading, or deceptive or is likely to create an erroneous impression regarding its character in any respect” (Codex, 2001, *supra* note 13 at 25). See also Anthony Ogus, *Regulation: Legal Form and Economic Theory* (Oxford: Clarendon Press, 1994) (see especially Chapter 7, “Information Regulation”); Elizabeth McNaughton & Jeffrey Symons, “Canada” in Jocelyn Kellam & Elizabeth Toni Guarino, eds., *International Food Law* (Norwich: The Stationary Office, 2000) [McNaughton & Symons].
 15. The message on their All-Bran cereal boxes claiming a “low fat, high fibre diet may reduce the risk of certain cancers” with the endorsement of the National Institute of Cancer. See Pauline M. Ippolito & Janis K. Pappalardo, *Nutrition and Health Advertising: Evidence From Food Advertising 1977-1997* (New York: Novinka Books, 2003).
 16. *Nutrition Labelling and Education Act of 1990*, Pub. L. No. 101-535.
 17. See Victor Fulgoni, “Health Claims: A U.S. Perspective” in Clare M. Hasler, ed., *Regulation of Functional Foods and Nutraceuticals: A Global Perspective* (Ames, Iowa: Blackwell Publishing, 2005) 79; John E. Calfee, *Fear of Persuasion: A New Perspective on Advertising Regulation* (La Vergne, TN: American Enterprise Press, 1997).
 18. *Food and Drugs Act*, R.S.C. 1985, c. F-27.
 19. *Ibid.*, s. 2.
 20. See McNaughton & Symons, *supra* note 14 at 95.
 21. Schedule A covers 40 diseases and conditions, including arthritis, asthma, cancer, diabetes, heart disease, hypertension, obesity, ulcer of the gastro-intestinal tract, etc.
 22. Health Canada, *Policy Paper on Nutraceuticals/Functional Foods and Health Claims on Food*, online: Health Canada <http://www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/claims-reclam/nutra-funct_foods-nutra-fonct_aliment_e.html> [*Policy Paper*].
 23. Namely, (1) A healthy diet containing foods high in potassium and low in sodium may reduce the risk of high blood pressure, a risk factor for stroke and heart disease; (2) A healthy diet with adequate calcium and vitamin D, and regular physical activity, help to achieve strong bones and may reduce the risk of osteoporosis; (3) A healthy diet low in saturated and trans fats may reduce the risk of heart disease; (4) A healthy diet rich in a variety of vegetables and fruits may help reduce the risk of some types of cancer; (5) Won’t cause cavities / Does not promote tooth decay / Does not promote dental caries / Noncarcinogenic. See *Food and Drug Regulations*, C.R.C., c.870, s. B.01.603.
 24. See Michael Heasman, “The Regulatory Context for the Use of Health Claims and the Marketing of Functional Foods: Global Principles” in Clare M. Hasler, ed., *Regulation of Functional Foods and Nutraceuticals: A Global Perspective* (Ames, Iowa: Blackwell Publishing, 2005).
 25. See *Policy Paper*, *supra* note 22.
 26. The perceived impact of the ability to make a health claim is directly related to that objective through product differentiation where a “health claim will persuade consumers that a particular product is preferable to consuming competing or similar products which don’t carry health claims.” Michael Heasman & Julian Mellentin, *The Functional Foods Revolution: Healthy People, Healthy Profits?* (London: Earthscan, 2001).



27. For an accessible introduction, see Ejan Mackaay, *Economics of Information and Law* (Boston: Kluwer Nijhoff Publishing, 1980).
28. See George A. Akerlof, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism" (1970) 84 *Quarterly Journal of Economics* 488. Akerlof demonstrates that, in a market where information is absent and hence detecting quality differences among low and high quality products is impossible, the low quality product will chase away the high quality products, sometimes leading to complete breakdown of the market. This information aberration is established in the economics lexicon as the "lemon" problem.
29. See Peter Barton Hutt & Peter Barton Hutt II, "A History of Government Regulation of Adulteration and Misbranding of Food" (1984) 39 *Food, Drug, Cosmetic Law Journal* 2; Marc T. Law, "The Origins of State Pure Food Regulation" (2003) 63 *Journal of Economic History* 1103.
30. See Philip Nelson, "Consumer Information and Advertising" in Malcolm Galatin & Robert D. Leiter, eds., *Economics of Information* (Boston: Martinus Nijhoff Publishing, 1981); Information and Consumer Behaviour, *supra* note 10; Advertising as Information, *supra* note 10; Economic Consequences, *supra* note 10; Michael R. Darby & Edi Karni, "Free Competition and the Optimal Amount of Fraud" (1973) 16 *J.L. & Econ.* 67.
31. See Advertising as Information, *supra* note 10.
32. See Informational Role, *supra* note 8; Paul A. Rubin & Ellen R. Jordan, "An Economic Analysis of the Law of the False Advertising" (1979) 8 *J. Legal Stud.* 527; Richard A. Posner, "Truth in Advertising: The Role of Government" in Yale Brozen, ed., *Advertising and Society* (New York: New York University Press, 1974) 111.
33. See Gary T. Ford, Darlene B. Smith & John L. Swasy, "Consumer Scepticism of Advertising Claims: Testing Hypotheses from Economics of Information" (1990) 16 *Journal of Consumer Information* 433.
34. See Advertising as Information, *supra* note 10.
35. See e.g. Caswell & Mojduszka, *supra* note 9.
36. For example, maintaining a healthy level of triglycerides and maintaining a normal blood pressure, etc. For the analytical ease, we confine ourselves here to only one such accomplishment: a healthy level of blood cholesterol denoted by H . Further, we assume that V could be realized by accomplishing H alone (i.e. maintaining a healthy blood cholesterol level would be the only accomplishment that determines a life with a lower risk of coronary heart disease). Note that the realization of H is a probabilistic outcome which is based on a multitude of factors, including genetic predisposition, diet, lifestyle, etc.
37. For example, the consumer's effort in verifying product attributes such as trans-fat and unsaturated fat that are directly associated with H would condition the probability of accomplishing H .
38. Further, we also assume that, in a Lancasterian sense, the consumer derives value from both these attributes and these attributes are not substitutable such that consumers verify both.
39. See Paul N. Bloom & James E. Pailin Jr., "Using information situations to guide marketing strategy" (1995) 12:2 *Journal of Consumer Marketing* 19.
40. The assumption of a greater marginal cost of verification efforts for credence attributes relative to experience attributes is realistic given the typical amount of information available to consumers on credence attributes relative to experience attributes.
41. See e.g. *supra* note 33.
42. See George J. Stigler, "The Economics of Information" (1961) 69 *Journal of Political Economy* 213.

