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'Natural' claims on foods: a review of regulations and a pilot study of the views of Australian consumers

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Publication Details

This article was originally published as Williams, PG, Markoska, J, Chachay, V and McMahon, A, 'Natural' claims on foods : a review of regulations and a pilot study of the views of Australian consumers, *Food Australia*, 61(9), 2009, 383-389. Original journal article available [here](#)

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The term 'natural' is often used on food labels, but is unregulated in Australia, except for prohibitions on misleading and deceptive conduct in the Trade Practices Act. This pilot study aimed to review definitions and regulations of 'natural' in Australia and internationally; record the ingredients used in a sample of foods marketed as natural; and examine consumer expectations about which ingredients could suitably be labeled natural. A survey of food labels at 12 food outlets recorded ingredients commonly used in foods marketed as natural. Consumer expectations were examined with a questionnaire about 25 'natural' food ingredients. One hundred and nineteen participants were sourced from clients of a weight loss clinic, and staff from three workplaces. Only the USA has a legally enforceable definition of 'natural' and in Australia there are three sets of different guidelines. Over 680 different ingredients were found in products with a 'natural' claim. Consumer perspectives varied on the suitability of many common ingredients with no real consensus, but the main concerns related to the level and type of processing, and the artificiality or unfamiliarity of ingredients. Consumer expectations about suitable ingredients do not always coincide with current guidelines. A clear definition is necessary to guide manufacturers; however, given the lack of consumer consensus, this may be difficult to develop.

Keywords

food regulation, natural, consumers, labels

Disciplines

Arts and Humanities | Community Health and Preventive Medicine | Dietetics and Clinical Nutrition | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

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Title: 'Natural' claims on foods: a review of regulations and a pilot study of the views of Australian consumers

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Word count: 5000

Version V5

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The term 'natural' is often used on food labels, but is unregulated in Australia, except for prohibitions on misleading and deceptive conduct in the *Trade Practices Act*. This pilot study aimed to review definitions and regulations of 'natural' in Australia and internationally; record the ingredients used in a sample of foods marketed as natural; and examine consumer expectations about which ingredients could suitably be labeled natural. A survey of food labels at 12 food outlets recorded ingredients commonly used in foods marketed as natural. Consumer expectations were examined with a questionnaire about 25 'natural' food ingredients. One hundred and nineteen participants were sourced from clients of a weight loss clinic, and staff from three workplaces. Only the USA has a legally enforceable definition of 'natural' and in Australia there are three sets of different guidelines. Over 680 different ingredients were found in products with a 'natural' claim. Consumer perspectives varied on the suitability of many common ingredients with no real consensus, but the main concerns related to the level and type of processing, and the artificiality or unfamiliarity of ingredients. Consumer expectations about suitable ingredients do not always coincide with current guidelines. A clear definition is necessary to guide manufacturers; however, given the lack of consumer consensus, this may be difficult to develop.

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Introduction

Food label information is an important determinant of consumers' food choices (Drischoutis & others 2006). Manufacturers market foods using a variety of descriptive terms on product labels such as 'organic', 'natural', 'pure' and 'fresh', which are designed to inform and influence the consumer, and the level of regulation of such claims varies. While the claim 'organic' is clearly defined and highly regulated by several non-government organisations, the term 'natural' is less clearly defined and is framed differently in different countries' regulations (Bostrom & Klintman 2003).

A national survey in 2002 found that 45% of Australians were more concerned about the safety and quality of food than they were five years previously and that the most common potential hazards of concern were additives and chemical residues (Williams & others 2004). The lack of label information about pesticide residues is one reason for consumer interest in organic and natural food labelling (Hall & others 1989) and perceptions of the natural content of a food and freedom from excessive processing are highly correlated with perceptions of its healthiness (Steptoe & others 1995, Lupton 1996, Zanolli & Naspetti 2002).

In Australia, consumers' commitment to the consumption of foods they perceive to be natural (ie, free of artificial additives and unnecessary processing) is the major determinant of increasing rates of consumption of organic foods (Pollard & others 1998, Lockie & others 2004). However the natural characteristics of food is also a highly motivating factor behind food choice even for consumers who do not choose organic food (Lockie & others 2002, Krystallis & others 2008) and is a significant component of ethical eating choices generally (Lindeman & Vaananen 2000).

The market for natural food products is growing and is one of the top 10 functional food trends in the US, where household penetration of natural foods (94%) is much greater than organic products (47%)(Sloan 2006). Most consumers believe in the disease-prevention properties of natural foods (Childs & Poryzees 1998) and in the USA are willing to pay higher prices for 'all-natural' foods (Batte & others 2007, Hill & others 2007). In response to strong consumer demand, manufacturers are actively seeking new

natural ingredients (Wissgott & Bortlik 1996) and are developing more foods enriched with natural ingredients (Senorans & others 2003).

However, there are difficulties in defining natural foods. Until the end of the 19th century, the concept of a 'natural product' went along with the notions of perishability and contamination. When new methods of food preservation (refrigeration and chemical preservatives) appeared in the last quarter of the 19th century scepticism emerged about the nutritional properties of preserved foods because such products were no longer perceived as natural (Stanziani 2008). Nowadays naturalness is often linked to ideas of traditional food production and invoked in opposition to new technologies such as genetic modification (Tenbült & others 2005).

'Natural' claims are particularly persuasive to Australian consumers (McMahon & others 2007) but there are no enforceable food standards regulating the use of the term. Nonetheless, food manufacturers are not without any guidance, as Food Standards Australia and New Zealand (FSANZ), the Australian Competition and Consumer Commission (ACCC) and the Australian Food and Grocery Council (AFGC) have all produced guidelines, albeit separately and with differing requirements.

The lack of consensus in these guidelines, as well as the lack of enforceable regulations, leaves consumers with only the precarious protection of the *Trade Practices Act 1974 (Cth) (TPA)*. The *TPA* prohibits food manufacturers from misleading or deceiving consumers, but the crux of defining misleading or deceptive conduct depends on consumer expectations. This raises the important question of what ingredients consumers expect to be in natural foods. The food industry is left with the task of interpreting consumer expectations if they want to use a natural claim on a product label and this may lead to a lack of uniformity in the use of natural claims across substantially similar products. In addition, consumers may be misled by considering natural foods to be superior to foods not labeled as natural (Food Standards Agency 2002). Thus misleading and deceptive conduct prohibitions may be difficult to interpret and enforce given the lack of knowledge about consumer expectations of the term 'natural'.

The aims of this study were to:

- review the definitions and regulations of the term ‘natural’ in Australia and overseas;
- examine the use of the term ‘natural’ on food product labels, and survey the ingredients used in these products;
- explore consumer perceptions and expectations of ‘natural’ foods and which ingredients could appropriately be called natural.

Ethics approval was granted by the University of Wollongong Human Research Ethics Committee.

Methods

Literature review

The definition of the term ‘natural’ was reviewed by an internet and literature search of food regulations and guidelines in Australia and worldwide (see Table 1 for sites and search terms used). The internet search was limited to publications available in the English language and sourced from Australia, New Zealand, Canada, United Kingdom, United States of America, European Union and Codex Alimentarius publications. The literature review was limited to English language full text articles available through the University of Wollongong library.

The review was focused specifically on definitions of natural as it applies to food labels. However as the results were sparse, the review was extended to encompass any legislation or regulation that prohibits misleading and deceptive conduct, because such legislation indirectly regulates ‘natural’ claims by prohibiting the misleading or deceptive labeling generally.

Food label survey

A survey of food labels was conducted in a convenience sample of nine large supermarkets from three major chains (Coles, Woolworths, IGA) and three health food stores in the Wollongong and central Sydney regions. An initial supermarket scan revealed that some food categories had numerous products with ‘natural’ claims whereas others did not. The food categories in supermarkets where ‘natural’ claims on food labels

were rare included meats, seafood, eggs, sauces , dressing, oils, herbs and spices, rice, instant soup, pasta and noodles, flour, sugar, fresh fruit and vegetables, frozen products (except ice cream), potato crisps, biscuits, honey and canned fruit. For convenience in this pilot study, these categories were therefore excluded from the full survey in the supermarkets (but were included in the survey of health food stores).

In other categories, all foods with a front of packet 'natural' claim were recorded. Specifically, the brand, product name, wording of the 'natural' claim, any other related claim, and ingredients were noted. A label was regarded as having a natural claim if the word 'natural' or any derivative of the term natural (eg, 'naturally', 'nature') was used to describe any aspect of the product or used in the product, brand or company name.

Consumer expectations questionnaire

Consumer expectations were examined with a questionnaire on perceptions of 'natural' foods and ingredients, developed from the results of the food product survey (available on request from PW).

The questionnaire listed 25 ingredients commonly found in products with a 'natural' label, covering five ingredient types: extracts, concentrates, additives, colours and flavours (see Table 3 for the full list). Participants indicated whether they believed each ingredient was suitable for inclusion in a food product with a natural claim (answer options: 'yes', 'no' or 'not sure'). The questionnaire asked participants to list reasons they would consider an ingredient unsuitable to be included in a food product claiming to be natural. Participants were also asked to indicate how often they read the ingredients list on a food product when shopping, using a 5-point scale (never, rarely, sometimes, often, always). Limited demographic data (gender, age, and level of education) was collected.

Subject selection and recruitment

One hundred and nineteen participants for the survey were sourced from a convenience sample of four different settings in Wollongong: a commercial weight loss clinic client base (n=27), staff working in a credit union (n=40), staff from a call centre workplace (n=47) and University of Wollongong general (non-academic) staff (n=5).

The call centre and credit union staff were invited to complete the questionnaire via a workplace email providing brief information about the study. Participant information sheets with a consent form and the questionnaire were supplied for interested staff. Weight loss clinic clients were invited when they visited the clinic via an information flyer at the front counter and also verbally to clients. University staff who responded to an email recruiting for focus groups for another study were invited to complete the questionnaire at the end of the focus group. A total of 270 staff at the call centre, 140 staff at the credit union, 75 clients from the weight loss clinic and nine University staff were invited to participate in the survey. The overall response rate was 24%.

Data analysis

The quantitative data were analysed using SPSS (version 14) performing descriptive analysis, and Chi-Square tests for significant differences between the responses given by participants of the different age, gender and education levels. The significance level used was $p=0.05$.

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Results

Literature review

The review of the regulations revealed that Australia, Canada, the UK, USA, and the European Union all have a definition of ‘natural’ in their guidelines (see Table 2), but only the USA has a definition that is legally enforceable (limited to meat and poultry products). All the regions have trade regulations that prohibit the misleading and deceptive labeling of food products as natural.

Australia and New Zealand

FSANZ is the regulatory authority that develops, implements and reviews food labelling requirements for food sold or prepared for sale or imported into Australia and New Zealand. FSANZ has statutory responsibility, in consultation with the States and Territories, to co-ordinate the monitoring, surveillance and enforcement of activities relating to food available in Australia.

The *TPA* and the the Australian States and Territories and New Zealand *Fair Trading Acts* prohibit misleading and deceptive representations on food labels. The ACCC administers the *TPA* and promotes competition and fair trade in the market place to benefit consumers, business and the community. “There is thus a conjunction of interests between FSANZ and the ACCC to ensure close co-operation in relation to any activity in the market place which may have the effect of undermining the shared objective of protection of consumers from misleading or deceptive conduct in relation to food products, particularly food labelling” (ACCC 2004).

The Australia and New Zealand Food Standards Code does not have a definition of natural, nor does it provide any regulation of misleading and deceptive representations on food product labels. FSANZ provides guides to many of its food standards, and the *FSANZ Representations about Food Guide* (FSANZ Guide) includes a detailed definition of ‘natural’ and provides guidance on when it is appropriate to make a natural claim (Food Standards Australia New Zealand 2002).

The FSANZ Guide requires that a natural food or ingredient should not contain any additives, have any constituent or fraction thereof removed, or be significantly altered from its original physical, chemical or biological state. Where a food contains additives that are natural ingredients themselves, the FSANZ Guide allows for the claim ‘This food contains natural ingredients’. The FSANZ Guide does not define ‘significantly altered’ nor does it provide examples of processes that would significantly alter an ingredient or food. A strict interpretation of the FSANZ Guide requirements could mean that many foods and ingredients that are usually considered to be natural, for instance butter or wholemeal flour, may not satisfy the definition.

In addition to the Food Standards Code, all Australian States and Territories have mirror *Food Acts* which are the responsibility of the relevant state or territory food authority and, at a national level, there is the *Imported Food Control Act 1992* administered by the Australian Quarantine and Inspection Service. The *Food Acts* and the *Imported Food Control Act 1992* do not contain a definition of the term ‘natural’, however they indirectly regulate claims by prohibiting misleading and deceptive representations on food labels.

The ACCC publication *Food and Beverage Industry: Food Descriptors Guide to the Trade Practices Act* states that ‘natural’ claims imply that a product’s ingredients have not been interfered with by humans (ACCC 2006). The ACCC guideline states that labelling chemically altered foods as ‘natural’ may be misleading and that food manufacturers should “put on their consumer glasses”, rather than using food technology definitions, when considering whether a natural claim may be misleading. While the ACCC guideline is not a Food Standard, compliance with the guideline might make it difficult for the ACCC to prosecute an action for misleading and deception conduct.

Generally, conduct will be misleading or deceptive if it is capable of inducing error or sends a message that would create the wrong impression in the minds of consumers. In determining whether certain conduct is misleading or deceptive, the courts examine whether a reasonable person in the class of consumers to which the product is targeted would be misled or deceived. Whether a manufacturer intended to mislead or deceive consumers is irrelevant. Manufacturers and suppliers must be able to substantiate claims with valid evidence before making such representations. However, certain product

attributes, such as the descriptor 'natural', cannot be easily measured or substantiated, largely because of the lack of any clear definition of the term 'natural' in Australian Food Standards.

The AFGC's *Code of Practice for the Provision of Information on Food Products* also provides non-mandatory guidance on the use of 'natural' claims, recommending that such claims only be made on foods that are in their natural state and which do not contain food additives other than natural food additives and flavours (AFGC 1995).

Canada

The regulatory position on natural food labels claims in Canada is substantially similar to that in Australia. The Canadian Bureau of Food Safety and Consumer Protection has produced a *Guide to Food Labeling and Advertising* (Canadian Guide) which provides a concise definition of the term 'natural' as it is applied to whole foods as well as individual ingredients (Canadian Food Inspection Agency 2003). This requires that a natural food or ingredient should not contain any additives, have any constituent or fraction thereof removed, or have been subjected to processing that significantly alters it from its original physical, chemical or biological state. The removal of water is not considered a significant alteration of state. The Canadian Guide provides a comprehensive list of processes that affect the natural character of foods with a minimum of physical, chemical or biological changes and those that affect the natural character of foods with maximum of physical, chemical or biological changes. For example, 'shredding' is a process that affects the natural character of a food with a minimum change (in this case the change is physical), whereas hydrogenation is a process that affects the natural character of the food with a maximum change.

The Canadian Guide attempts to distinguish between single ingredient foods and compound foods. Only single ingredient foods may be labelled as 'natural', but the guide recognises that some ingredients, food additives, vitamins and mineral nutrients may be derived from natural sources and may be regarded as natural ingredients, in which case an acceptable claim would be that the food contains 'natural ingredients'. However, while the ingredient can be described as natural, the food itself cannot, since it contains an added component.

United Kingdom

In the UK, the food legislation does not provide a definition of the term ‘natural’ nor regulate how and when natural claims should be made on food labels. The Food Standards Agency *Guidance Note - Criteria for the Use of the Terms Fresh, Pure, Natural etc in Food Labelling* does provide a definition of ‘natural’ (Food Standards Agency 2002).

According to the UK Guidance Note, ‘natural’ means that the product is comprised of natural ingredients, which are ingredients produced by nature rather than produced or interfered with by humans. The Note states that “the term ‘natural’ without qualification should be used only to describe...single foods, of a traditional nature, to which nothing has been added and which have been subjected only to such processing as to render them suitable for human consumption”. “Smoking (without chemicals), traditional cooking processes such as baking, roasting or blanching and traditional methods of dehydration” and “physical sieving and washing with water” are examples of processes that are acceptable for foods or ingredients labelled as ‘natural’.

The UK Guidance Note is thorough in its scope covering several uses of the term, including where it is used to describe only specific aspects of a food, or where it is used in the brand or product name of the food. “A food that does not meet the criteria to be described as ‘natural’ or ‘made from natural ingredients’ should not be claimed to have a ‘natural’ taste, flavour or colour.” The Note provides that “claims such as ‘natural goodness’, ‘naturally better’, or ‘nature’s way’ are largely meaningless and should not be used.” It also recognises and permits the well understood use of the term ‘natural’ on dairy products to indicate that the products are manufactured only from milk, using only the necessary, associated fermentation cultures and therefore are ‘plain’, unflavoured products.

United States of America

Of the seven regions reviewed, a definition of ‘natural’ that is legally enforceable exists only in the USA and there it is limited in scope, applying only to meat and poultry.

The US Department of Agriculture (USDA) Food Safety and Inspection Service *Food Standards and Labelling Policy Book* (Policy Book) requires that products can only carry a 'natural' claim if they contain no artificial or synthetic ingredients or chemical preservative, and if they are minimally processed (USDA 2005). The Policy Book defines minimal processing as “(a) those traditional processes used to make food edible or to preserve it or to make it safe for human consumption, eg, smoking, roasting, freezing, drying, and fermenting, or (b) those physical processes which do not fundamentally alter the raw product and/or which only separate a whole, intact food into component parts, eg, grinding meat, separating eggs into albumen and yolk, and pressing fruits to produce juices.” Before a manufacturer can use the term ‘natural’ on a meat products or poultry product, the manufacturer must make an application to the USDA demonstrating that the product satisfies the Policy Book requirements.

European Union

The European Union’s *Council Regulation (EC) No 1536/92* provides a definition of the term ‘natural’ in relation to preserved tuna and bonito product labels; it requires that the term only be used on products that are preserved in either the natural tuna or bonito juice exuding during cooking, or saline solution or water, with the allowance additional of herbs, spices or natural flavourings. The term ‘natural’ may also be used to describe mineral water and the EU also permits some flavourings to be described as natural, but *Council Directive 2000/13/EC* prohibits the use of product label information that is misleading to the purchaser, and thereby prohibits the labeling of food products as ‘natural’ where such labelling would be misleading to consumers.

Summary of definitions

Overall the definitions:

- require that a ‘natural’ food or ingredient has no additives
- require that a ‘natural’ food or ingredient has no constituent removed or significantly changed
- require that a ‘natural’ food or ingredient is subjected to only minimal processing

- distinguish between compound ingredient foods and single ingredient foods (Canadian and UK definitions are clearest on this point)
- are influenced by trade regulations and provide guidance on misleading and deceptive conduct/representations prohibitions.

Food label survey

The food label survey found a total of 353 products with ‘natural’ claims in the categories of: nuts and seeds (67), dried fruit (52), soft drinks, waters, juices and teas (31), couscous, rice and grains (26), dairy and soy products (25), muesli and cereals (22), canned/dried vegetables (20), jam, spread and sauces (18), confectionery (14), breads (13), crispbreads and crackers (11), fruit bars and breakfast bars (10), baby food (8), pasta and noodles (8), frozen foods (5), vinegar (3), canned seafood (2), miscellaneous health food products (18).

Uses of the term ‘natural’ on food labels

The ‘natural’ claims can be broadly categorised as: (1) *natural ingredients* or *natural whole product* claims, (2) *natural style* claims (such as natural muesli as opposed to toasted muesli), (3) *natural source of nutrients* claims (eg, yoghurt being a natural source of calcium), (4) *natural health/goodness* claims, (5) *natural flavour or colour* claims, (6) *natural brand and product names* and (7) *miscellaneous* claims (such as claiming a natural taste or that the product was “nature’s selection”). Figure 1 shows the prevalence of each use of the term on food labels in these categories. The most common use of the term ‘natural’ and its derivatives was as part of product or brand names, such as ‘Naturo’, ‘Nature’s Selection’, and ‘Bio Nature’. The next most frequent were the natural ingredients or natural whole product claims, eg. “all natural rice crackers”.

Ingredients found in products with a ‘natural’ claim

A wide variety of ingredients (n=686) were used in the food products with ‘natural’ claims. Some of the ingredients appeared to be clearly inconsistent with the FSANZ, ACCC and AFGC guidelines, since they are significantly altered from their original physical, chemical or biological state. Examples of such ingredients included: refined sugar, sulphur dioxide, thiamin, vitamin C, calcium carbonate, modified starch, yoghurt

compound, vegetable gums, non-fat milk solids, gluten, acesulphane-K, and sodium benzoate.

Consumer questionnaire

Questionnaires were completed by 119 participants (21% male; 77% female). Most were in the age range 18-55y, with only one participant over 65 years; 58% were tertiary educated and 40% had completed secondary education. The ingredient list was read always by 19% of participants, often by 31%, sometimes by 38%, rarely by 8%, and only 4% of participants reported never reading the ingredient list.

Most consumers (>60%) indicated that they had seen natural claims on labels of yoghurt, bread, cereal bar, juice and confectionery products. The percentages of questionnaire respondents who indicated that the listed ingredients were suitable (yes) or are not suitable (no) for inclusion in products labelled 'natural' are presented in Table 3.

More than 80% of participants agreed on the suitability of wholemeal flour and over 60% on the suitability of pear puree, canola oil, yeast, and vitamin C. Most participants (58%) agreed that sugar was a natural ingredient. There was also consensus (>70%) that both the natural colour caramel and the synthetic colour 129 (allura red) would be unsuitable for inclusion in products with a 'natural' label. However, there was no clear agreement about the suitability of 19 other common ingredients. Over 40% of consumers were unsure about the naturalness of gelatine, vegetable gum, hydrolysed vegetable protein, maltodextrin and inulin.

There were no significant differences between age groups, genders, or levels of education for most responses. Females were significantly more aware than males of yoghurt products with natural claims on the label ($p=0.012$). Respondents aged 46-55y were significantly more uncertain about the naturalness of honey powder and apple juice concentrate than those aged 26-35y ($p<0.05$). Participants with a secondary education were significantly less certain about the naturalness of glucose syrup, maltodextrin, malt extract, honey powder, wheat starch and vitamin C than those with a tertiary education ($p<0.01$), and tertiary educated participants indicated that honey powder, wheat starch

and vitamin C were not natural significantly more often than those with a high school education ($p < 0.05$).

Participants who indicated that they 'never' read the ingredient list were far more likely to indicate they were 'not sure' about an ingredient (63%) than those who read the ingredient list 'rarely' (36% not sure), 'sometimes' (32% not sure), 'often' (26% not sure) and 'always' (11% not sure).

Factors that would make an ingredient unsuitable for inclusion in 'natural' foods

One hundred participants provided reasons why they thought an ingredient would be unsuitable for inclusion in foods labelled as 'natural'. Four key themes emerged: level of processing, artificiality of the ingredient; quantity of added ingredients, and familiarity. Table 4 provides examples of typical comments under these themes.

From the responses it was clear that consumers believed that excessive processing or reformulation makes an ingredient unsuitable for inclusion in foods labelled as 'natural'. According to one participant, "natural means that nothing else has been added". Colours, flavours, additives, preservatives and anything that "is not found in nature and has to be manufactured" or "synthesised in a laboratory" were also regarded by consumers as unsuitable for inclusion in foods labelled as 'natural'. The theme of processing was closely linked to artificiality of an ingredient, as some methods of processing were considered to render an ingredient artificial and thereby unnatural, for example the use of chemical extraction processes for ingredients.

Consumers also indicated that the quantity of an ingredient included in a food product could be an important factor determining whether the product could appropriately be labeled 'natural'; for example, sugar was generally considered a natural ingredient, but not appropriate when it was added to a food in high quantities.

Consumers' lack of familiarity with food technology and ingredients also emerged as a strong theme. The lack of familiarity with chemical names of ingredients is a barrier consumers face when evaluating claims made on food labels.

Discussion

From the survey results, it seems clear that the current Australian guidelines on 'natural' foods do not necessarily coincide with consumer views about what ingredients might be appropriate. For example, some highly refined or manufactured ingredients (such as vitamin C, canola oil and sugar) were generally accepted as suitable, while a natural colour like caramel was not. This difference in attitudes may be due to a lack of familiarity; ingredients such as inulin are usually only found in manufactured products, while other refined ingredients (such as oils) are found in the normal kitchen environment.

The questionnaire results revealed a significant lack of consumer agreement on the naturalness of many common ingredients; for example in relation to whey powder and wheat starch responses were equally divided between 'yes', 'no' and 'not sure'. There was a degree of inconsistency in the views as well. Some products that were concentrated by water removal (like apple juice concentrate) were seen as appropriate, while others (like honey powder) were not. The general sentiment was that if consumers were not familiar with the ingredient or the food processing technology it was considered as unnatural and not suitable for inclusion in food products with a 'natural' claim. This is consistent with results found by Sullivan (2003) in low income Canadian shoppers who were concerned about unfamiliar ingredients in foods.

This lack of alignment between the guidelines and consumer views has significant implications for compliance with the *Trade Practices Act* prohibitions on misleading claims. If an ingredient that might be technically acceptable according to the guidelines is seen as inappropriate by consumers, then a claim of 'natural' could be seen to be misleading.

There were several different uses of the term 'natural' on food labels ranging from describing the ingredients, to describing the culinary style of the food. This lack of consistency can also contribute to consumer confusion (Kristal & others 1998). The frequent use of the term 'natural' in the brand name of foods is most concerning because

this type of use is not mentioned by the FSANZ or ACCC guidelines and is only briefly covered in the AFGC guide. This type of use may imply that the product is natural without the product necessarily meeting the requirements in the guides.

When asked why they would consider an ingredient to be unsuitable, consumers focused on additives, E numbers (additive codes) and the artificiality of ingredients. Consumers also considered that 'natural' means 'healthy' or may be used by manufacturers to suggest that the food is healthy. This may reflect a more general consumer scepticism and concern about the credibility of all claims on food labels (Chan & others 2005).

Limitations

The convenience sampling methods used to select food outlets for the product survey, and to recruit participants for the questionnaire, limits the applicability of these results. The findings from the product survey are unlikely to represent the whole Australian food supply and a more complete product survey would be valuable.

Because males, adults aged 18-25y or 65+y, and people with a secondary education level were under-represented among the survey participants, the sample is not representative of the Illawarra nor of the Australian population generally (Australian Bureau of Statistics 1996). It is possible that males and older persons would have responded to the survey questions differently, however since females are still the main food purchasers (Peter & Olsen 1999) the higher proportion of women in the sample is probably justifiable. In addition, participants drawn from the weight loss clinic are likely to be more aware of product labelling and ingredients (Wandel 1997), but such health-conscious consumers are also those most likely to be interested in claims such as 'natural' on foods. Given the small number of clients from this source it was not possible to compare the perspectives of the weight loss clients and other consumers, but this would be useful to explore in further research. Nonetheless, the reported behaviour of the survey participants, with 50% reading labels often or always, is similar to the findings from other Australian research which reported that 52% of Australian consumers use the ingredient list at least most of the time (FSANZ 2003).

Conclusions and Recommendations

Creating clear guidelines on use of the term ‘natural’ will be difficult given the apparent lack of consumer consensus on its meaning for food products, particularly regarding the level of processing of ingredients. However, there is a need for clearer definitions and guidelines, as the market for natural food products is growing, and this will require more research to understand consumer definitions of ‘natural’. There is also a need for more consumer education about food processing technologies and the types of ingredients commonly found in foods, to promote awareness and effective use of food label information.

In formulating a more useful definition for Australian food manufacturers, aspects of the UK and Canadian Guides could be considered. In particular, guidance on the use of the term ‘natural’ in brand names, as in the UK Guide, more explanation of the concept of ‘significantly altered’, as in the Canadian Guide, and a list of processes that would or would not significantly alter a food or ingredient would be useful to incorporate into a revised guide that was endorsed by FSANZ, the ACCC and the AFGC.

Table 1. The search strategy used for regulations of the term ‘natural’

Databases Searched	Websites Searched	Search Terms
<ul style="list-style-type: none"> • Annual Reviews • APAFT • BioMed Central • PubMed • Cambridge Journals Online • Cinahl • Cochrane – all • Expanded Academic ASAP • Health Reference Centre Academic • Health Sciences: A SAGE Full-Text Collection 	<ul style="list-style-type: none"> • FSANZ • NSW Food Authority • Codex • Health Canada • Canadian Food Inspection Agency • Bureau of Food Safety and Consumer Protection • European Food Safety Authority • US Food and Drug Administration • United States Department of Agriculture • Food Standards Agency UK 	<ul style="list-style-type: none"> • natural • label • food • standard • safety • legislation • regulation • guide • health • claim • definition • representation

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Table 2. The presence of a definition of the term ‘natural’ and regulation of ‘natural’ claims in different jurisdictions

Country/Region	Natural definition - legally enforceable	Natural definition - guideline	Misleading and deceptive representation regulation
Australia/NZ	No	Yes	Yes
Canada	No	Yes	Yes
UK	No	Yes	Yes
USA	Yes – specific products only	No	Yes
European Union	Yes - partial	No	Yes
Codex	No	No	Yes

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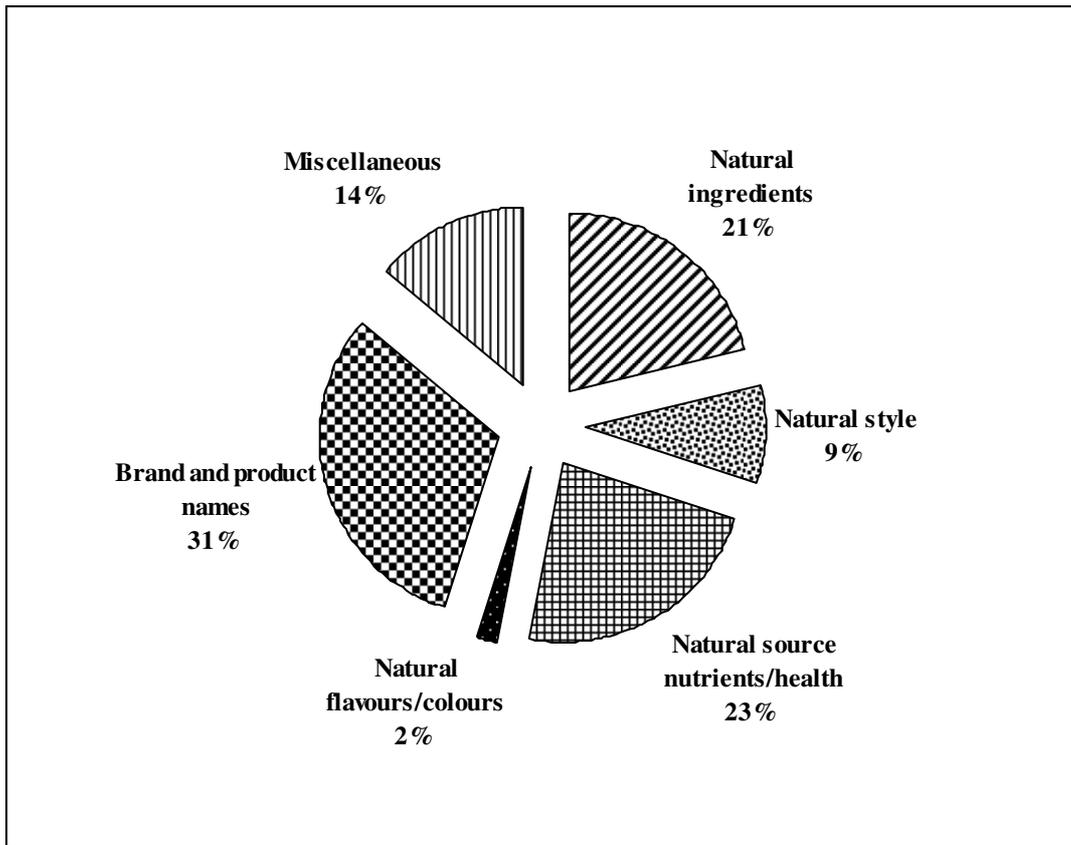


Figure 1. Uses of the term 'natural' on food labels (n=353)

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Table 3. Percentage of participants who indicated that the listed ingredients would be suitable for inclusion in a product labeled ‘natural’ (n=119)

Ingredients	Frequency (%)		
	Yes	No	Not Sure
whole meal flour	80	11	7
vitamin C	73	12	13
pear puree	67	16	15
yeast	63	22	15
canola oil	62	22	16
sugar	58	31	10
natural flavour	45	30	23
apple juice concentrate	44	36	16
glucose syrup	41	42	15
gluten	39	34	26
malt extract	37	35	26
guarana extract	34	33	31
whey powder	31	33	35
wheat starch	29	35	30
gelatine	28	23	47
soy lecithin	28	46	24
food acid citric	26	42	29
non-fat milk solids	25	38	35
vegetable gum	18	35	45
honey powder	16	51	30
maltodextrin	15	30	53
hydrolysed vegetable protein	11	48	40
inulin	10	20	68
colour caramel	8	72	20
colour 129 (allura red)	2	76	22

Table 4. Key themes and consumer quotes about the concept of ‘natural’ ingredients (n=100)

Level and type of food processing

the product has been altered from its natural state

if the ingredient has been significantly modified

if it has been processed that is no longer representative of the raw product

it has been excessively processed/extracted

if it has undergone processing that changes its chemical make up

Artificiality of food or ingredient

it's been added to – enhanced

chemicals added

if is ‘extract’

if it is an additive, not actually grown but rather created

anything E colours, colouring etc artificially coloured

Quantity of ingredient important

ingredient is extracted from other food and added to a product in quantities that don't match natural amount

if the ingredient is used to sweeten the food to a much higher level

exceptionally high sugar content (yes, sugar is natural, but consumers are often tricked into thinking natural = healthy)

high level of sugars, beyond what is natural in food

Lack of familiarity with food technology and ingredients

some claims are obviously commercial and you wonder whether the ingredients added are really good for you

if it was not clear what the ingredient was, eg E numbers or chemical name which is not clear

if there are already many ingredients and they have numbers and code names

if I'm not sure what it is

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