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Whole grain cookies: relevant legislation and consumer's perception

Biscoitos integrais: legislação pertinente e percepção do consumidor

Abstract

Countless benefits are attributed to whole grain foods, especially due to the concentration of dietary fiber in these products. It is widely known that whole grain cookies are part of the consumers' diet, that food labeling is the primary means of communication between producers and consumers, and that a relevant legislation for this class of food is required. Thus, the present study aimed to verify whether nutrition claims and/or terms displayed on the labels of whole grain cookies are in compliance with the applicable labeling legislation, and to also ascertain consumer's perception on these claims as well as their preference for and consumption of these products. The study was carried out in three supermarkets in the city of Videira-SC, split into two stages: label analysis through a checklist and administration of a questionnaire to consumers. Results showed non-compliances, especially the use of terms not foreseen by the law, which could mislead consumers. Regarding the perception of consumers, they mostly believe that a product may contain at least 50% of whole grains to be called a whole grain food, and associate them with health benefits. It is necessary to develop and promote nutrition education actions as well as constitutional rigidity and compliance with the applicable legislation, and new and relevant technical standards for whole grain foods in order to improve requirements for this class of food.

Keywords: Food and nutrition education. Feeding behavior. Nutrition labeling.

Resumo

Inúmeros benefícios são atribuídos aos alimentos integrais, especialmente pela concentração de fibras nesses produtos. Sabe-se que biscoitos integrais compõem a dieta dos consumidores, sendo a rotulagem o principal meio de comunicação entre indústria produtora e consumidores, e que não existe legislação específica para essa categoria de alimentos. Assim, este trabalho objetivou verificar se as informações e/ou discursos nutricionais presentes nos rótulos de biscoitos integrais estão de acordo com a legislação geral de rotulagem, e também averiguar a percepção dos consumidores frente às alegações, bem como sua preferência e consumo desses produtos. O estudo foi realizado em três supermercados da cidade de Videira-SC e contemplou duas etapas: análise de rótulos por meio de *check-list* e aplicação de questionário com consumidores. Os resultados evidenciaram inadequações, destacando-se a utilização de informações não previstas em lei, que podem induzir o consumidor a erros. Quanto à percepção dos consumidores, estes majoritariamente acreditam que para um alimento ser considerado integral, deve conter no mínimo 50% dessa fonte de ingrediente, e os associam a benefícios à saúde. Verifica-se a necessidade de desenvolver ações que promovam educação nutricional, bem como rigidez, cumprimento das leis vigentes e novos planejamentos de normas técnicas

específicas para alimentos integrais, a fim de estabelecer critérios quanto à determinação desse grupo de alimentos.

Palavras-chave: Educação alimentar e nutricional. Comportamento alimentar. Rotulagem nutricional.

INTRODUCTION

Labels displayed in food products are the primary means of communication between producers and consumers to inform facts on what is being purchased, from its centesimal composition to the description of particular properties.¹

In May 2004, during the 57th World Health Assembly, the Global Strategy on Diet, Physical Activity and Health recommended education, communication and overall awareness actions, suggesting that healthier choices are possible through clear and coherent messages conveyed to consumers.² The World Health Organization (WHO) believes that one of the required measures is better accuracy on food labeling, in order to provide information on the nutritional and physical properties of food according to the *Códex Alimentarius* food standards and the national legislation.³

Whole grain manufactured foods and supplemented with dietary fiber, especially breads and cookies/biscuits, are common dietary choices among consumers. This information helps to build evidence that consumers are aware of the benefits of whole grain foods, but downplay the need to read food labels, the nutrition facts on amounts, and the most relevant item to be observed in this case: the presence (or not) of whole wheat flour as the primary ingredient in the selected product.⁴

In Brazil, it is the Agência Nacional de Vigilância Sanitária (ANVISA) (the Brazilian Health Regulatory Agency) role to regulate and execute sanitary control of products and services subject to health regulation, including packaged foods and their labeling, as established in Article 8 of Law 9.782/1999.⁵ However, there is no applicable legislation to determine which standards should be followed for the labeling of whole grain foods. Thus, the amount of whole grain ingredients in products labeled as whole grain foods is determined by the producer, according to what they deem necessary in the formulation of their product.⁴

Certain benefits are attributed to fiber-rich cereals and whole grains, such as risk reduction of cardiovascular diseases, cerebrovascular disease, colorectal cancer and type 2 diabetes *mellitus*.^{4,6} Even though the refinement process of grains by industries partly subtract dietary fiber and delay the release of their sugars (thus making them more digestible), it is widely used due to its capability of prolonging the shelf-life of manufactured goods.⁶ Therefore, nutrition labeling can be effective in choosing more suitable products.^{7,8}

When considering the constant need to improve sanitary controls of the food industry, research can draw the relevant bodies' attention to improve legislation on whole grain foods, especially on cookies, besides highlighting the influence of product labels on consumers' health choices.

Thus, the present study aimed to verify whether nutrition claims and facts on the labels of whole grain cookies, with or without complementary nutrition information on dietary fiber, displayed on the shelves of three supermarkets in Videira-SC, are in accordance with the applicable labeling legislation, and to also ascertain consumers' perception from these supermarkets on these claims as well as their preference for and consumption of these products.

MATERIALS AND METHODS

The present study was carried out on the premises of three supermarkets with the greatest flow of people from the city of Videira-SC. Research was reviewed and approved by the Comitê de Ética em Pesquisa (CEP) (Research Ethics Committee), under reference no. 2.188.552, CAAE no. 71485317.3.0000.5367.

Label analysis

Labels analyzed were from the class of food of whole grain cookies, with or without complementary nutrition information on dietary fiber. Front labels that claimed to be “whole grain”, “mixed/multi-cereal” and “mixed/multi-grain” were also included in this study.

Products were classified according to variety (savory, sweet, cookie type, donut type, homemade type, with icing), adding up to 24 labels from 12 distinct brands, represented by the letters “A” to “L”. The “A” brand presented three varieties of product; the “G”, “H” and “L” brands, two varieties; the “I” brand, four varieties; the “J” brand, five varieties; and the “B”, “C”, “D”, “E”, “F” and “K” brands, one variety. One of the products from the “J” brand did not claim to be “whole grain”, but it was included in the analysis process as it stated on its front label and in its ingredients list to contain “8 seeds”. Analysis was carried out with duplicate labels.

Data were collected and assessed according to a checklist built upon the requirements of the applicable and relevant legislation, in which compliances and non-compliances were identified and described, between July and September 2017.

The checklist included the analysis of the following items on each label: descriptive name; use of term “flour fortification”; presence of whole wheat flour as primary ingredient; presence of nutrition facts and mandatory information; presence of Customer Support Center; presence and compliance of complementary nutrition information on dietary fiber; and terms or claims that could mislead consumers, such as superlative quality claims, claims to improve health or prevent disease, and emphasis on the presence or absence of intrinsic components. Each item was classified as “compliant”, “non-compliant” or “does not apply”.

Labels were assessed against the following legislation: Resolutions of the Collegiate Board of Directors (RDC): no. 259, of September 20, 2002, which approves the technical regulation for labeling packaged food⁹ and no. 54, of November 12, 2012, which approves the Technical Regulation on Complementary Nutritional Information¹⁰; and the Resolution no. 12, of 1978, of the Comissão Nacional de Normas e Padrões para Alimentos (CNNPA) (National Commission on Norms and Standards for Foods) which approves technical regulation on foods for special purposes such as cookies and biscuits.¹¹

Consumer's Perception

A structured questionnaire covering five close-ended questions and one open-ended question was administered to consumers to assess their perception on the subject. Consumer participation was individually validated through a Free and Informed Term of Consent (FITC). Based on sample size calculations, 150 individuals were randomly approached in the three supermarkets where the study was carried out, from both genders, with people over 18 years of age. Data were collected between October and November 2017, every other day.

Methodology

Analysis and statistics of collected data were performed using tools from *Microsoft Word*® (2016), *Microsoft Excel*® (2016) and *GraphPad Prism*® 7.0. Collected data were compiled in a qualitative and quantitative manner.

RESULTS AND DISCUSSION

Label analysis

The 24 nutritional labels analyzed were those belonging to the class of food of whole grain cookies, displayed in the establishments assessed during this research. Findings were taken from a structured checklist based on the applicable legislation.

Regarding the items on flour fortification, nutrition facts and presence of Customer Support Center (CSC), as well as products displaying complementary nutrition information as a “source of dietary fiber”, were all in compliance with the applicable legislation.⁹⁻¹¹ In order for a product to claim to be a “source of dietary fiber” on the label, it is required that its serving size contains at least 2.5g of dietary fiber or a minimum of 3.0g in 100g of the product.¹⁰

All analyzed labels also displayed all mandatory information: name of the food; list of ingredients; net content; identification of origin; name and address of the manufacturer/importer (in the case of imported food); identification of lot and expiration date, according to the applicable legislation.⁹

Regarding the descriptive name, an incorrect description using solely the word “product” was found on the label of the “B” brand, without further identification. The description as “product” makes unclear to which class of food it refers; as outlined in the CNNPA no. 12/1978, “biscuits or cookies are a product obtained by kneading and convenient cooking of dough from flour, starch, fermented starch, or not, and other food substances”, and so it should appear on the label.¹¹

As for potential consumer misleading claims, such as highlighting the absence of an intrinsic component; superlative claims, functional and/or health claims, and information classified as incorrect, insufficient, or that cannot be substantiated, those have been observed in 16.67% of the analyzed sample, in products of the “J”, “G”, “H” and “I” brands, respectively.

On the label of a product of the “J” brand, the claim of “0% cholesterol” represents a noncompliance, according to item 3.1.c of the RDC 259/2002, which does not allow the use of words that highlight the presence or absence of intrinsic or inherent substances in food of the same class. Cholesterol is exclusively present in products of animal origin or that contain ingredients from this origin,⁹ which was not observed in this product.

One of the labels of the “G” brand claimed to be a duty to consume such product: “Snacks can and should be part of a balanced diet”, claiming to promote health through the terms of “balanced diet” and “nutritious”.

Non-compliances related to misleading terms were also found in the “H” brand label, claiming “7 cookies: right serving size”. Studies have shown the relevance of individual meal planning and nutrition as an effective approach for the various dietary needs.^{12,13} Referring to the product’s serving size as the “right measure” misleads the consumer to believe that nutritional needs are the same to all people.⁹

According to the Brazilian applicable legislation on labeling, particularly on item 3.1.b of RDC no. 259/2002, food labels must not contain terms or claims that cannot be substantiated, as they could mislead consumers regarding the nature, composition, origin or quality of product.⁹

The product of the “I” brand was not compliant due to the use of the term “homemade”, which was advertised on the front label but did not match its descriptive name, and also because it is a claim that cannot be substantiated.^{9,11}

When assessing the consumer’s perception on the term “homemade”, it was shown that this term is related to more natural and healthy food, handmade, with staple ingredients from home, without food additives, according to the consumer’s perception.¹⁴

It was found that only 33,33% (n=8) of the analyzed samples contained whole wheat flour as their primary ingredient. Although there is no applicable legislation that requires this ingredient to appear first in the ingredient's list, the RDC no. 259/2002 states that "all ingredients shall be listed in descending order of ingoing weight",⁹ and therefore it was found that a cookie that claims to be whole grain does not necessarily include primarily whole grain ingredients in the product.

In a study that assessed the credibility of labels, it was shown that 57.8% of consumers have the habit of reading the ingredients' list, and that 75.8% do not trust or partially trust the information displayed in the packaging, based on the idea that the label is only a marketing tool, which is not inspected by the competent authorities, and that information is manipulated, false or omitted.¹⁵

Another non-compliance found was in the label of the "D" brand, which listed the ingredient "whole flour" without specifying which grain was used as whole. According to the applicable legislation, the term "whole flour" can be used provided it accompanies the common usage name of the grain of origin (wheat, rye, etc.) on the label.¹¹

Consumer's Perception

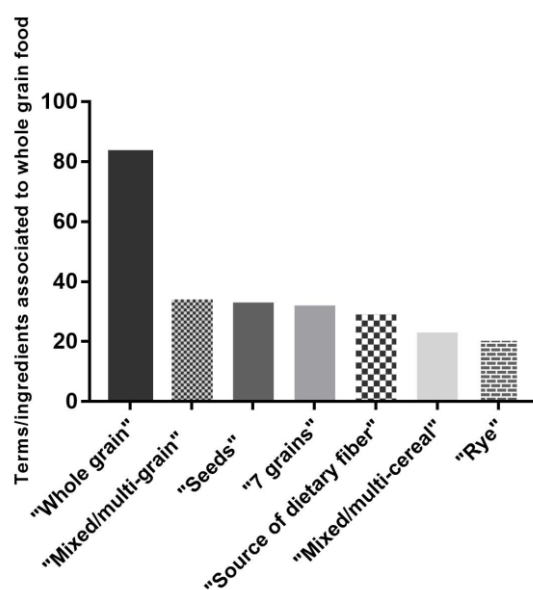
Out of the total sample (n=150), 80.67% (n=121) of consumers were females and 19.33% (n=29) were males, of which 94.67% (n=142) were adults and 5.33% (n=8) were elderly.

According to ANVISA, whole grain flour is "a product obtained by a process of cracking or crushing the edible part of whole grains, rhizomes, fruits or tubers", that does not go through any refinement process like other "white flours".¹¹

When questioned about the claims and/or ingredients displayed on the labels, it should be noted that 100% (n=150) of the respondents associated the terms displayed therein as to be a whole grain food, and 82.7% (n=124) believe that if the term "whole grain" is advertised therein, then the product must surely be it. Only 26.0% (n=39) believed that only that specific term can define it. The remaining 74.0% (n=111) believed this and/or other terms and ingredients can define a whole grain food.

Out of the total participants, 34.0% (n=51) believed that the terms "mixed/multi-grain" also define the product as a whole grain food; 33.3% (n=50) "seeds"; 32.0% (n=48), "7 grains"; 28.7% (n=43), "source of dietary fiber"; 23.3% (n=35), "mixed/multi-cereal"; and 21.3% (n=32), "rye" (figure 1).

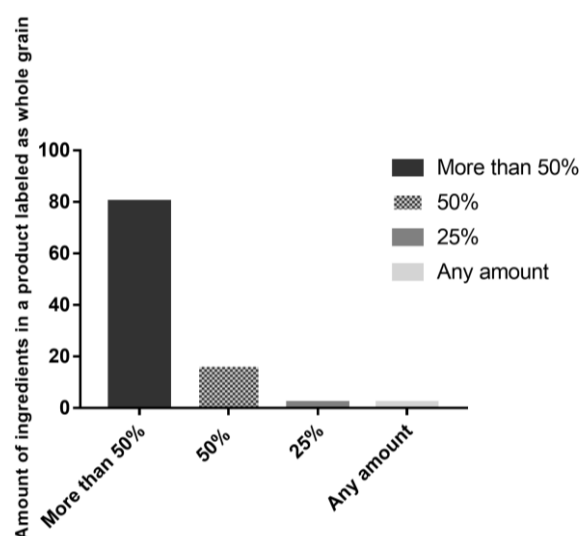
Figure 1. Consumer's perception on the nutrition claims of whole grain food labels. Videira-SC, 2017.



Source: the authors themselves.

When asked about the composition of whole grain cookies, one can observe in figure 2 that most respondents believe that a whole grain cookie has “more than 50%” of whole grain ingredients in its composition. As there is no national applicable legislation to determine this percentage, the amount of whole grain ingredients currently used is set by the producer’s themselves. These results also reflect the idea that if the term “whole grain” is highlighted on the label, then that product should have most whole grain ingredients. Thus, the lack of relevant legislation for this class of food could mislead consumers, a practice that goes against the principles of transparency, good faith, freedom of choice and the right to information set forth in Art. 37, item 1 of the Código de Defesa do Consumidor (CDC), the Brazilian Consumer Protection and Defense Code.¹⁶

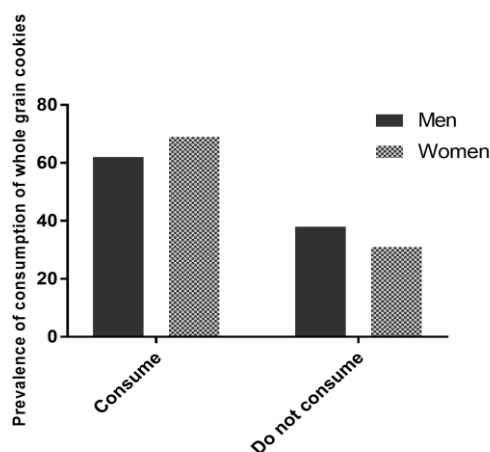
Figure 2. Consumer’s perception on the amount of whole grain ingredients in a cookie labeled as whole grain. Videira-SC, 2017.



Source: the authors themselves.

When assessing the consumption of whole grain cookies, the preference for such products is clear both among women and men interviewed (figure 3). This preference could imply that people are looking for health benefits, and the consumer’s level of education could be one of the determining reasons for that choice.¹⁷

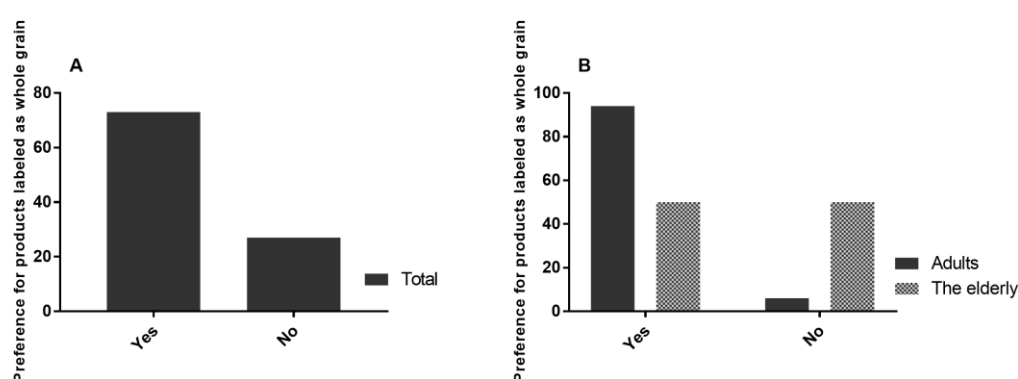
Figure 3. Comparison between males and females prevailing consumption of whole grain cookies. Videira-SC, 2017.



Source: the authors themselves.

Regarding the preference for products described as “whole grain” which may imply to bring health benefits to people, one can notice the influence of such claim when purchasing/consuming these products, as shown in figure 4, of which 72.7% (n=109) state that this term plays a role in their choice (figure 4A). When comparing such purchase/consumption preference among adults and the elderly, 94% (n=71) and 50% (n=4) of each, respectively, reported a preference for products that claimed to be whole grain (figure 4B).

Figure 4 (A) (B). Preference for foods labeled as whole grain due to association with health benefits. Videira-SC, 2017.



Source: the authors themselves.

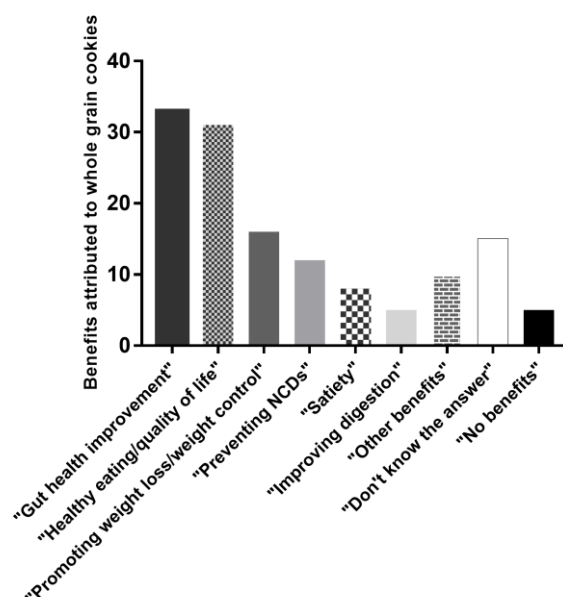
(A) Data on the preference for foods labeled as whole grain by all assessed consumers.

(B) Data on the preference for foods labeled as whole grain between adults and the elderly.

In another survey, it was noted that the elderly perceive healthy eating habits to be as natural as possible, cherishing fruits and vegetables and avoiding ultra-processed foods.¹⁸ Regarding the adult population, in another study, the authors observed that 64.8% of respondents stated they always read the nutrition facts on labels.¹⁵ Another survey, on the other hand, verified that 55% of respondents rarely or never read the nutrition facts on labels; and that 78% regularly or always look for information other than nutrition-related.¹⁹ Araújo,²⁰ however, perceived that consumers of the state of Distrito Federal are more concerned with the expiration date than the nutrition facts, justified by a lack of interest and trouble to understand the information displayed on labels.

When inquired about the health benefits promoted by whole grain cookies (figure 5), only 5.3% (n=8) believed to have no benefits and 15.3% (n=23) stated to not know the answer. The vast majority, 32.7% (n=49), associated them to “*gut health improvement*”; 30.7% (n=46), to “*healthy eating/quality of life*”; 16.0% (n=24), to “*promoting weight loss/weight control*”; 12.0% (n=18), to “*preventing chronic non-communicable diseases (NCDs)*”; 8.0% (n=12), to “*promoting satiety*”; 5.3% (n=8), to “*improving digestion*”; and 10.0% (n=15) described other benefits such as “*several/countless benefits*”; “*less processed*”; “*less food preservatives*”; “*lower gluten concentration*”; “*local fat reduction*”; “*reduction of menopause symptoms*”; “*healthy looking hair, skin and nails*”; “*lower intoxication*”/“*detoxing*”.

Figure 5. Consumer's perception on the health benefits advertised by whole grain cookies. Videira-SC, 2017.



Source: the authors themselves.

*NCD's: Non-communicable diseases (diabetes, high blood pressure, hypercholesterolemia and hypertriglyceridemia).

It is shown that the consumption of fiber-rich whole grains may lower the risk of developing coronary artery disease, stroke, colorectal cancer and type 2 diabetes mellitus.²¹ The probable mechanism of action of whole grains in the prevention of colorectal cancer are due by the fact that the fiber from whole grains play a protective role against the development of neoplasms.^{21,22}

The benefits attributed to whole grains as gut protectors are countless, among which we can point out an increased frequency of bowel movements and volume of stool, hence a decrease of contact between the intestinal mucosa and the carcinogens found in feces, and thus improving the evacuation of tumor-promoting cells; plus the ability of dietary fiber to bind to bile acids, reducing the absorption of lipids, as well as their prebiotic function.⁹

CONCLUSION

Even though labels are subject to compliance with all applicable legislation, while assessing claims and information displayed on the studied labels, it was possible to identify non-compliances such as superlative claims and/or advice to improve health or prevent diseases; absence of intrinsic components; incorrect or insufficient information; claims that cannot be substantiated; and missing information on which whole grain ingredient was being used; all reasons that could mislead consumers.

The influence of nutrition claims/terms and advertisements displayed on the labels of cookies that claim to contain whole grain ingredients at the time of purchase/consumption by the consumer is glaring, especially due to the association of this class of food with greater bowel movement and quality of life, among others. Although there is no legislation to determine the minimum amount of whole grain ingredients in these products, consumers believe that they may contain at least 50% of such source of ingredients.

The need for a relevant legislation becomes evident in order to determine the minimum amount or percentage of a particular ingredient for a product to claim itself as "whole grain", ensuring information displayed to the consumer is useful and reliable.

This study also met some difficulties, especially regarding the scarcity of similar studies and the absence of a legislation to determine/standardize this class of food, to adjust their composition so that the producer-consumer relationship becomes transparent, to avoid misleading consumers.

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Contributors

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