

EVALUATION OF CONSUMERS' PERCEPTION REGARDING INSPECTED AND NON-INSPECTED CHEESES BY FREE WORD ASSOCIATION

Avaliação da percepção dos consumidores em relação a queijos inspecionados e não inspecionados por Associação Livre de Palavras

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ABSTRACT

The Free Word Association technique was used with the objective of knowing the perception of consumers about inspected and non-inspected cheeses and their main drivers. Participants residing in the State of Rio Grande do Sul, Brazil, were recruited online and invited to list the first four words and/or expressions that came to their minds when faced with images of uninspected homemade cheese and inspected cheeses, both artisanal and industrialized. All valid words were grouped by semantic meanings in dimensions/categories, and those cited by at least 5% of the participants were analyzed using the chi-square test of independence, considering 5% of the meaning. There was no statistical relationship ($p>0.05$) of acceptance or rejection between the three types of cheese, most words related to feelings were positive for all products analyzed. For uninspected homemade cheeses, consumers' perception is linked to traditional forms of production, mentioning words such as colonial, artisanal, homemade, and familiar; the correlation of these cheeses with cultural habits and forms of consumption is also strong. The artisanal inspected cheeses were associated with the words industrialized, standardized, label, packaging, and expensive, clearly linked to industrial manufacturing processes, greater consumer safety and greater added value. For inspected industrialized cheeses (mozzarella), the words pizza, snack, melted, and delicious indicate good acceptance and refer to gastronomy. The findings reveal that the perception of inspected cheeses is directly related to quality and control, which is not the case for non-inspected cheeses, related to traditional production and cultures.

Keywords: artisanal cheese; consumer behavior; feeling; consumption; perception

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RESUMO

A técnica de Associação Livre de Palavras foi utilizada com o objetivo de conhecer a percepção dos consumidores sobre queijos inspecionados e não inspecionados e seus principais direcionadores. Os participantes, residentes no Estado do Rio Grande do Sul, Brasil, foram recrutados on-line e convidados a listar as quatro primeiras palavras e/ou expressões que viessem à sua mente diante de imagens de queijos caseiros não inspecionados e queijos inspecionados, tanto artesanais quanto industrializados. Todas as palavras válidas foram agrupadas por significados semânticos em dimensões/categorias e as citadas por pelo menos 5% dos participantes foram analisadas utilizando o teste do qui-quadrado de independência, considerando 5% de significância. Não houve relação estatística ($p > 0,05$) de aceitação ou rejeição entre os três tipos de queijos, a maioria das palavras relacionadas a sentimentos foram positivas para todos os produtos analisados. Para queijos caseiros não inspecionados, a percepção dos consumidores está ligada às formas tradicionais de produção, mencionando palavras como colonial, artesanal, caseiro e familiar; também é forte a correlação destes queijos com hábitos culturais e formas de consumo. Os queijos artesanais inspecionados foram associados às palavras industrializado, padronizado, rótulo, embalagem e caro, nitidamente ligados a processos industriais de fabricação, maior segurança ao consumo e maior valor agregado. Para os queijos inspecionados industrializados (mozzarella), as palavras pizza, lanche, derretido e delicioso indicam boa aceitação e remetem à gastronomia. As descobertas revelam que a percepção sobre queijos inspecionados esta direcionada para qualidade e controle, o que não ocorre para queijos não inspecionados, relacionados à produção tradicional e cultura.

Palavras-chave: queijo artesanal; comportamento do consumidor; sentimento; consumo; percepção

INTRODUCTION

Brazilian artisanal cheeses, very popular among consumers, have historical and socioeconomic importance. They are typically produced by small producers, characterized by small-scale production, following traditional techniques proper from each region (CRUZ; MENASCHE, 2014; KIMIMURA *et al.*, 2019). Most producers commercialize dairy products to complement the family income, although some of them have it as their primary income basis (CRUZ; MENASCHE, 2014; CARVALHO *et al.*, 2016). However, the food safety of artisanal food products, more specifically dairy products made from non-pasteurized milk, has been discussed for decades. It is aggravated by the fact that several producers are not formalized and not inspected for hygienic conditions by government regulators. From the social point of view, artisanal cheese producers have difficulties complying with food

safety regulations due to high financial costs and consumers' demand for traditional, local, and unique foods (CRUZ; SCHNEIDER, 2010; CRUZ; MENASCHE, 2014; KIMIMURA *et al.*, 2019). From the microbiological point of view, on the other hand, artisanal non-inspected cheeses have been shown to present higher bacterial contamination than those from formalized industries (SENGER; BIZANI, 2011). Furthermore, epidemiological data on foodborne diseases in Brazil are scarce and there are several difficulties in monitoring and controlling their outbreaks (DRAEGER *et al.*, 2019).

Within this complex context, the consumption of uninspected artisanal cheeses may be explained by consumers' perception of food quality and benefits, whether they are conscious or unconscious. Thus, price, brand, sustainability, short production chain, and animal welfare are as important as sensory properties, food technology, and safety. On the other hand, risk perception of foods is associated with adverse

consequences of food consumption and is most influenced by the cognitive processing of information provided by third parties and deliberations related to one's prior experiences (SIEGRIST *et al.*, 2000; WILCOCK *et al.*, 2004; UELAND *et al.*, 2012). For example, Serrano cheese consumption in southern Brazil is clearly driven by the traditional production process, local consumers' food culture (CRUZ; MENASCHE, 2014), and the insertion of environment preservation (AMBROSINI *et al.*, 2012).

Consumer buying behavior towards food products is a complex process. Consumers make their purchase decisions based on several factors, mostly based on heuristics, consumers' expertise, costs, and previous experience with the product (SIEGRIST *et al.*, 2000; WILCOCK *et al.*, 2004; UELAND *et al.*, 2012). Evaluating consumers' main motivations for consuming uninspected artisanal cheeses is essential to understand the purchase decision process. Free Word Association (FWA) is a fast, convenient, and efficient tool to assess how consumers perceive products, including new, traditional, and undefined food concepts (ARES *et al.*, 2008; ANDRADE *et al.*, 2016). It has been used to explore consumers' perceptions of local and organic foods (ROININEN *et al.*, 2006), functional yogurts (ARES *et al.*, 2008), traditional foods (GUERRERO *et al.*, 2010), lamb meat (ANDRADE *et al.*, 2016) and white mold surface-ripened cheeses (JUDACEWSKI *et al.*, 2019), among others. It is one of the most used methods for the evaluation of conceptual structures of people, and a tool for studying beliefs and attitudes and predicting people's behaviors in the psychology and sociology of consumers (AJZEN; FISHBEIN, 1980; ARES *et al.*, 2008). In this way, the aim of this article was to use the FWA approach to gather information about consumers' perceptions of inspected and non-inspected cheeses.

MATERIAL AND METHODS

This article came from field research, observational in nature and descriptive qualitative approaches.

Participants

A total of 232 volunteers from Rio Grande do Sul, the southernmost Brazilian state, were recruited through an online survey. Invitations were shared on social media and by the University's database e-mails. Subsequently, participants were recruited using the snowball sampling technique, which characterizes the study sampling as non-intentional non-probabilistic. Sampling was determined considering Rio Grande do Sul population of 10 million and 880 hundred thousand people (IBGE, 2023), 5% sample error and a heterogeneous population (split 80/20) and 95% of confidence (MAGALHÃES; LIMA, 2008), which would be necessary 245 respondents. Like Andrade *et al.* (2016) and Alves *et al.* (2021), the intention of the present work was not to obtain information that statistically reproduces a real population but to explore associations between possible cheese consumers. The research was submitted and approved by the Research Ethics Committee of State University of Rio Grande do Sul n. 4.256.890 and all participants were in accordance with participating in the study.

Data collection

Data were collected through Google Forms during July and September 2020. Consumers were asked to answer all questions spontaneously. The software-imposed consumers to answer the questions one at a time, in the specified order.

Participants were presented with one single cheese picture at a time and asked to complete the word association task. They were asked to provide the first four words or feelings that came to their minds when they thought of each cheese.

Three cheeses were chosen as stimuli for the FWA technique: non-inspected homemade cheese inspected artisanal cheese and inspected industrialized cheese. The image of uninspected homemade cheese represented cheeses typically sold in southern Brazil in different sizes and formats, without labels or packaging and with a hard yellow rind. They were named "homemade cheese" since artisanal products are not necessarily non-inspected. The image of inspected artisanal cheese represented the cheeses with

official sanitary inspection, which typically are packaged and mandatorily labeled; they were named "homemade cheese". The image of inspected industrialized cheese represented mozzarella, a dairy product highly consumed in Brazil. Its function was to dissipate the competition aspect between homemade and inspected cheese, in addition to capturing the consumer's perception of highly industrialized cheeses.

Furthermore, respondents were asked to answer socio-demographic questions and consumption frequency of cheese and homemade cheese, as follows: (a) every day or almost every day; (b) several times in a week, but not every day; (c) once a week; several times in a month, but not every week; (d) once a month; (e) several times in a year, but not every month; (f) once or twice a year, and (g) less than once a year or never.

Data analysis

All valid words cited by participants were considered for data analysis. Three researchers, familiar with the topic and inspired by previous literature, carried out a search for recurrent terms and semantic similarities, defining the classification of the terms first into categories, and then into dimensions (GUERRERO *et al.*, 2010; ANDRADE *et al.*, 2016; JUDACEWSKI *et al.*, 2019). Initially, the lemmatization procedure was performed (correction of typing/spelling mistakes; deleting connectors and auxiliary terms; standardization of the verbs in the infinitive, the nouns in singular, and the adjectives in masculine-singular form). Then, a triangulation process was performed for all categories and dimensions proposed by the authors. Eventual discrepancies as well as converging ideas were discussed and resolved by them. At that time, using a double translation approach, the words were translated from Portuguese to English, and afterward from English to Portuguese. If there was a perfect match, the word was kept; otherwise, the word was changed and reanalyzed until an agreement was reached. The results are shown in English and Portuguese to ensure a full understanding of the answers.

Words mentioned by at least 5% of the participants were considered for further analysis (JUDACEWSKI *et al.*, 2019). The frequency of mention of each word was calculated and expressed in frequency tales. The interdependence between the words' dimensions and the kind of cheese shown to the volunteers and cheeses' categories and their consumption frequency was evaluated by an independent chi-squared test in Excel. All statistical analyses were evaluated considering 5% of significance.

RESULTS AND DISCUSSION

Characterization of the sample

From the 232 responses, 164 were considered valid. Volunteers that live outside the state of Rio Grande do Sul (RS) and that did not provide four words, feelings, or thoughts were considered outliers. Females composed 59% of the sample; 83% were in the range of 26-60 years old, 83% were undergraduate degrees and 38% had an income that ranged between R\$ 1,045.00 and R\$ 3,135.00. 55% of the consumers claimed to consume cheeses daily and 37% several times during the week. Regarding consumption of homemade cheese, 6% answered that they consume it daily, 15% several times during the week, 5% once a week, 21% several times during the month, 7% once a month, 26% several times during the year, 7% once or twice a year and 12% almost never. The intention was not to get information from a sample that corresponds to an actual market population but to explore consumer associations for cheeses among Brazilians (ANDRADE *et al.*, 2016).

Free word association

A total of 722 different words were associated with the three pictures. Figure 1 shows the relative frequency of those words mentioned a least 5% for each cheese. Results show that volunteers present different trigger profiles for each dairy product. For homemade cheese, aspects related to how they are produced were the main words cited (Figure 1A). "Colonial/

Colonial” was cited by 28% of volunteers, “*artisanal/artesanal*”, by 12%, “*homemade/caseiro*”, by 8%, and “*family-owned/familiar*” by 7%. The results show that the small scale of production, specifically from family farms, and the

relation to a territory are characteristics of homemade cheeses. In this sense, improving the dairy market to hyper- and supermarkets seems not to be an effective strategy, since consumers may not relate the product to big retailers.

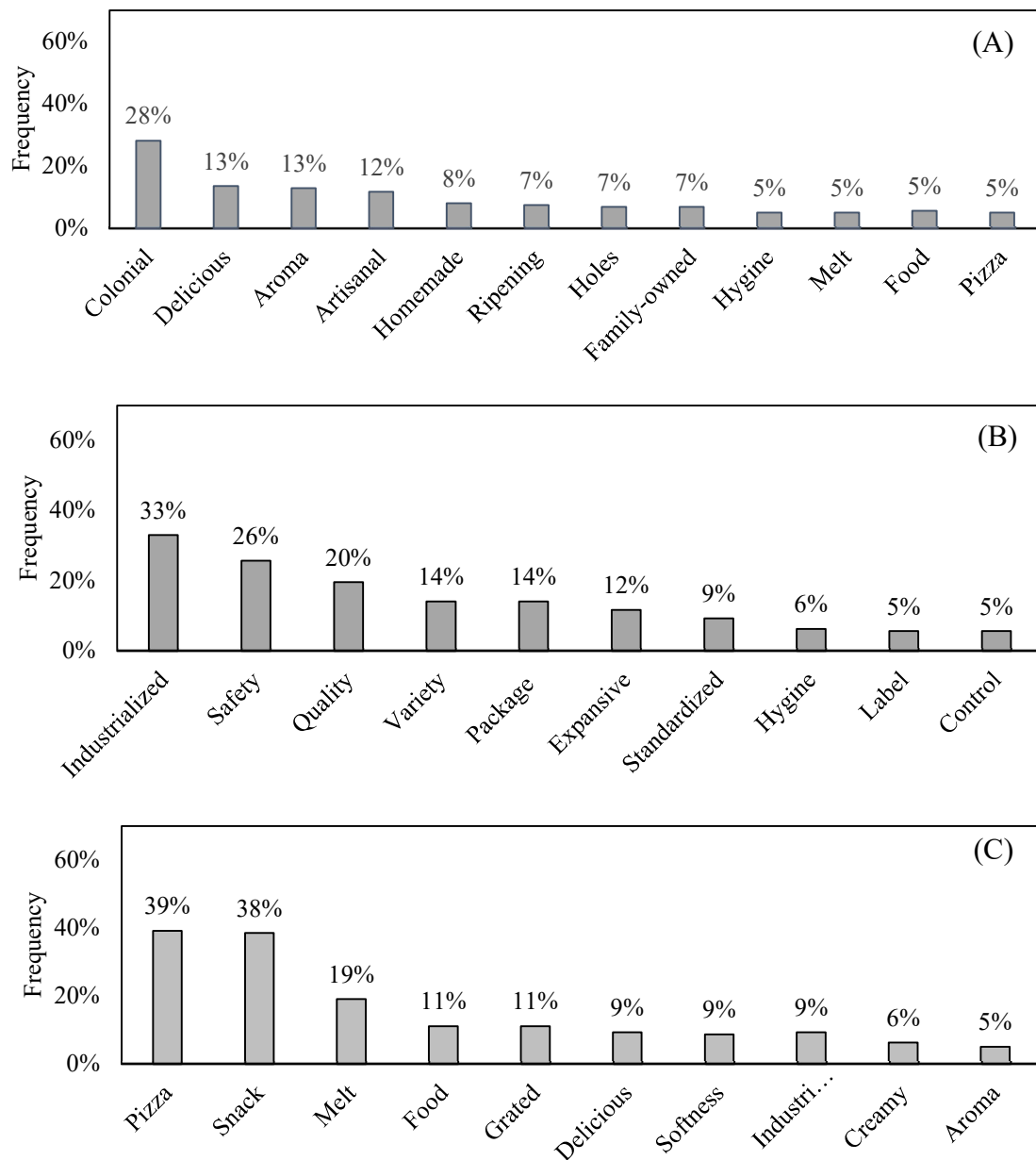


Figure 1. Words cited at least 5% in the free word association for Homemade Cheese (A), Inspected Cheese (B), and Mozzarella (C)

Balogh *et al.* (2016) observed similar behavior to traditional food products, where people prefer traditional products from farmers’ markets instead of supermarkets. To increase

profits, artisanal foods certification (Protected Designation of Origin, Protected Geographical Indication and Traditional Specialty Guaranteed) and traditional food innovations are alternatives.

Colonial cheese consumers perceive them as a product with a cultural identity, seen as an expression of historical know-how, produced in a way that respects the environment and has relevance to the economy of the places where it is produced (AMBROSINI *et al.*, 2020). For inspected cheeses, on the other hand, words related to large-scale production composed the main results (Figure 1B). "Industrialized/*Industrializado*" was cited by 33% of consumers, "standardized/*padronizado*" by 9%, "label/*rótulo*" by 5%; "package/*embalagem*" by 14%. The image of packaged and labeled cheeses made volunteers relate them to industrialized products, with standardized attributes. In fact, these results summarize the consumers' perceptions that artisanal foods are produced on a small scale. This may be a barrier to the improvement of artisanal dairy products since it is obviously possible to produce traditional and artisanal foods in larger companies. Additionally, 12% of responses linked inspected cheeses to be "expensive/*caro*" (Figure 1B). Non-formalized cheeses are cheaper, due to no food safety control needs and no taxes. Price has been mentioned as one of the main features of consumers' purchase intention (ELDESOUKY; MESSIAS, 2014; RIBEIRO *et al.*, 2018). Actually, the low price may be a primary buying factor, over the brand, healthiness, or certification features (RIBEIRO *et al.*, 2018). Price alone is not necessarily the most attractive business strategy (GRUNERT, 2005), but it may be an important choice decision parameter in this particular case. However, results indicate that consumers may have some barriers to correlating industrialized foods to these features.

For mozzarella, the responses related volunteers to gastronomical traits, with 38% of consumers citing "snack/*lanche*", 19% citing "melted/*derretido*", 11% citing "grated/*ralado*", 9% citing "delicious/*delicioso*", 9% citing "soft/*macio*", 9% citing "industrialized/*industrializado*" and 6% citing "creamy/*cremoso*" (Figure 1C). Mozzarella is classified as a commodity in the Brazilian cheese market, widely used in prepared foods, and remains one of the consumer's favorite varieties, amongst the most produced in the country and

very popular among low-income consumers (IBGE, 2020; GOMES *et al.*, 2017). Different perceptions of volunteers between a generic cheese inspected and specific cheese inspected (mozzarella) may be related to its high consumption, ease of purchase in supermarkets, and the practicality of using the cheese sliced into sandwiches and fast meals (DOTTO *et al.*, 2015).

Regarding food safety, the results show interesting findings. For homemade cheese, "holes/*olhaduras*" were highly cited (Figure 1A). The presence of gas holes and consequently a spongy texture in cheeses is due to coliforms and/or yeasts growing in excessive numbers (BINTISIS; PAPADEMÁS, 2002; DEUS *et al.*, 2017). This is a common feature for artisanal cheeses in southern Brazil, correlated mainly with inadequate product handling and process failure (SENGER; BIZANI, 2011; ANTONELLO *et al.*, 2012; CASARIL *et al.*, 2017). On the other hand, consumers' responses highlighted the words "control/*controle*", "quality/*qualidade*" and "safety/*seguro*" for the inspected cheeses (Figure 1B). These results indicate that people are aware of the concept of quality, control, and safety, in other words, they don't mainly correlate them to homemade cheeses. "Hygiene/*Higiene*" was cited for both samples equally, but perhaps with opposite meanings. Freitas *et al.* (2019) observed that the knowledge and/or practical aspects associated with food safety led to optimistic bias. Corroborating, Cunha *et al.* (2014) observed that traditional knowledge about food safety is not correlated with good manufacturing practices attitudes. Although both studies evaluate food handlers in Brazil, the data may be extrapolated to Brazilian consumers and could present an explanation for the results of the present work. Brazilian consumers are worried about safety; however, they need higher comprehension of their role in the food supply chain. Thus, public health interventions aiming to increase consumer knowledge and awareness of food safety should be emphasized over a medium to long-term period (AUAD *et al.*, 2019). It is also important to emphasize that food choice is complex and food safety may be one feature to be considered for consumers' purchasing action.

Dimension and categories

Words from FWA were dimensioned and categorized as shown in Table 1. Statistical results indicate the relation between the dimension of the word cited by the volunteers and the kind of cheese shown to them. The results showed that the category of words dimensioned as “consumption”, “food supply

chain” and “sensory” are related ($p < 0.05$) with the type of cheese shown to the volunteer. Word categories from the other dimensions (feelings/attitude, hygienic aspects, and others) are not related to the type of cheese shown ($p \geq 0.05$). Figure 2 details the results of the dependence of the words’ category cited and the type of cheese.

Table 1. Frequency of appearance of dimension and categories of words cited for homemade, inspected and mozzarella cheeses

Dimension	Category	Homemade	Inspected	Mozzarella
Feelings/Attitude	Positive	155	145	106
	Negative	29	38	19
Consumption	Culture	21 ^a	17 ^a	8 ^a
	Gastronomy	78 ^a	30 ^a	239 ^a
	Type	94 ^a	17 ^a	67 ^a
Food Supply Chain	Raw material	15 ^a	3 ^a	3 ^a
	Origin	33 ^a	6 ^a	0 ^a
	Producer	15 ^a	1 ^a	0 ^a
	Processing	2 ^a	65 ^a	16 ^a
	Package	0 ^a	46 ^a	3 ^a
	Commercialization	5 ^a	64 ^a	12 ^a
Hygienic aspects	Regulations	43	87	14
Sensorial	Appearance	59 ^a	75 ^a	50 ^a
	Aroma	22 ^a	7 ^a	9 ^a
	Flavor/taste	40 ^a	37 ^a	34 ^a
	Texture	43 ^a	11 ^a	70 ^a
Others	Others	1	3	2

^a There is statistical relation based on chi-squared analysis of the kind of cheese analyzed (homemade, inspected and mozzarella) and the categories of the word cited considering a significance of 5%. The non-superscript letter indicates that the dimension of the words cited did not depend on the kind of cheese.

Dimensions of feelings/attitudes and consumption were the most common ones among the words associated with the cheeses. Results indicate that most feelings and attitudes were positive (delicious, health, quality, safety) rather than negative (expensive, greasy, coliform) for all analyzed cheeses. Ambrosini *et al.* (2020) demonstrated that colonial cheese has a positive reputation with consumers, presenting characteristics such as taste, cost-benefit

ratio, and following hygiene standards that meet the emotional and functional needs of consumers. Judacewski *et al.* (2019) observed that feelings and attitudes expressed by Brazilian consumers about white mold surface-ripened cheese were negative, mainly due to the lack of habit of consuming this type of cheese and to cultural issues. Ambrosini *et al.* (2020) reported that consumers pay attention to the consumption of colonial cheese due to its emotional

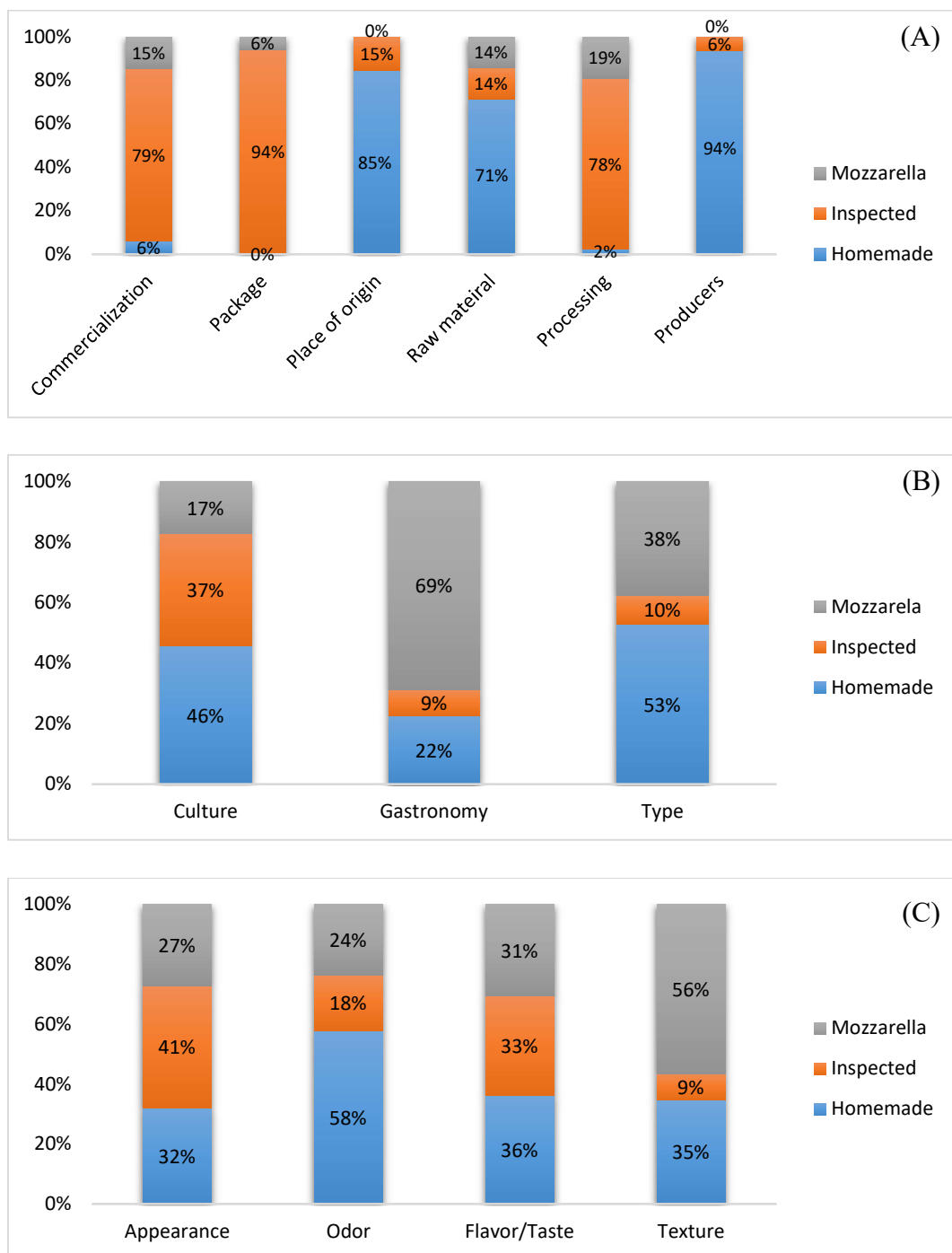
connection with the product, especially childhood memories. Even if related to intangible food quality characteristics, it was expected that homemade cheeses would present more positive feelings among the consumers, since they were identified as "artisanal/*artesanal*", "homemade/*caseiro*" and "family-owned/*familiar*". However, results indicate that there is no statistical relation ($p \geq 0.05$) between the cheeses analyzed and whether consumers present positive or negative feelings, i.e., the negative or positive words independent of the kind of cheese shown to the consumers. Both industrialized cheeses shown in the survey also presented higher positive words related to them, showing equal acceptance by respondents.

In the dimension food supply chain, the main categories cited for the cheeses were "commercialization/*comercialização*", "package/*embalagem*", "processing/*processamento*", and "origin/*origem*" (See Table 1). They depend on the type of cheese analyzed ($p < 0.05$). In summary, commercialization ("*supermarket/ supermercado*", "*price/preço*", "*agribusiness/agronegócio*"), package ("*package/embalagem*", "*label/rótulo*") and processing ("*industrialized/industrializado*") were cited 79%, 94% and 78% for inspected cheeses (Figure 2A). It must consider that these perceptions can be associated with contemporaneous anxiety about food, which can lead to a drop in consumer confidence in industrially produced food (SOUZA *et al.*, 2011). On the other hand, 85% of words related to origin were related to homemade cheese. Although it was not frequently cited, it is important to point out that 94% of words in the producer's category ("*family-owned/familiar*", "*family agriculture/agricultura familiar*") and 71% of the raw-material category ("*milk/leite*") were related to the homemade cheese. Ambrosini *et al.* (2020) observed in their study that consumers link the purchase of colonial cheese with social aspects, such as supporting the

regional economy by purchasing food locally produced by small family farmers.

The categories of the words' evoked in the dimension consumption depended on the type of cheese ($p < 0.05$). In the culture and type categories, homemade cheese presented a higher correlation. Figure 2(B) shows that 46%, 37%, and 17% of the culture (tradition, culture) words were cited as homemade, inspected, and mozzarella cheeses respectively. In the type words (colonial, homemade, artisanal), 53%, 10%, and 38% of the words cited were related to homemade, inspected and mozzarella cheeses respectively. Traditional food products are perceived as foods that are consumed every day or quite frequently by people. They are part of everyday life and commonly used, usually passed down from generation to generation, made in a precise manner, with little or no processing. They present distinguished sensory properties associated with a certain region (GUERRERO *et al.*, 2010). On the other hand, within gastronomy applications (pizza, lasagna, snack), 69% of the words were cited for mozzarella, meanwhile, 22% and 9% were cited for homemade and inspected cheese respectively.

In the dimension of sensorial features, appearance, flavor/taste, aroma, and texture were the main categories cited (Figure 2C). They depend on the type of cheese analyzed ($p < 0.05$). 41% of the words cited for inspected cheese were related to appearance ("*format/formato*", "*round/redondo*"). Within the texture category ("*softness/macio*", "*holes/olhaduras*", "*texture/textura*", "*melt/derretido*"), 56% of the words were cited for mozzarella and 35% for homemade. Flavor and taste were divided equally among the samples studied. Words related to aroma ("*aroma/aroma*", "*strong odor/cheiro forte*"), 58% were tracked to homemade cheese. Flavor, taste, aroma, and appearance determine perceptions in the choice and acceptance of a food product by consumers (JUDACEWSKI *et al.*, 2019).



* Other dimensions (Feelings/Attitude, hygiene, and others) were not statistically related to the frequency of consumption of cheeses based on the chi-square test at 5% of significance.

Figure 2. Independence relation between the cheese (homemade, inspected, and mozzarella) and categories of the dimensions (A) Food Supply Chain, (B) Consumption, and (C) Sensorial, dimensions of the words evoked by the volunteers*

Serrano and colonial artisanal cheeses are commonly sold in the shape of cobblestones or cylinders of 1 kg and, since they are made of unpasteurized milk, present a strong odor, spicy,

salty, and a little bitter taste (KIMIMURA *et al.*, 2019). Dotto *et al.* (2015) showed that, in the purchase decision, the consumer first observes the general appearance of the product, right after the

smell, followed by the color, flavor, and acidity, which were the last places.

In the hygienic aspects dimension, since just one category was performed, it was not possible to analyze statistically the relation between the cheeses and the categories. Despite this, several words were cited in this dimension related to regulatory aspects. For homemade cheese, the main words cited were "hygiene/higiene," "legislation/legislação", "ripening/maturação", and "wooden material/material de madeira" (n=43). For inspected sample, "control/control" and "inspection/inspeção" were the main words (n=87). For mozzarella, "control/control" and "cleaning/limpeza" were cited (n=14). The reputation of the cheese producers is critical for consumers to evaluate the dairy products; besides, their microbiological quality assessment method does not consider formal inspection aspects. (CRUZ; MENASCHE, 2014).

It is not uncommon for homemade cheeses to be related to a negative predisposition about their safety (CRUZ; MENASCHE, 2014), but the results of the present study show that consumers link them to other product features. The quality of foods is a wider concept and people also relate foods to sensory, traditional, environmental, financial, sentimental aspects (CRUZ; SCHNEIDER, 2010; AMBROSINI *et al.*, 2012; UELAND *et al.*, 2012; AMBROSINI *et al.*, 2020). Consumers' perceptions can be biased, being significantly affected by cheese type, information, familiarity, and involvement with this food (LAHNE *et al.*, 2014).

People's knowledge about food safety and risks is not enough to change attitudes through correct practices on the subject (CUNHA *et al.*, 2014), and the improvement of hygienic-sanitary conditions to offer consumers higher safe foods seems to be related to producers' motivation to acquire and use food safety knowledge since people will keep buying these products despite of homemade microbiological features. Additionally, to improve the quality of products for consumers, controlling the availability of these products to society should be considered. However, Benincá *et al.* (2020) observed that an important factor for

this topic is the professionalization and control of milk production in a territory, which can impact the lower availability of illegal products in markets.

CONCLUSION

The use of the Free Word Association technique showed to be an important tool to reveal that consumers residing in Rio Grande do Sul (Brazil) related inspected and non-inspected cheeses to positive feelings/attitudes, gastronomy consumption, type of cheese, appearance, flavor/taste, and texture. Homemade cheese stood out for words of culture, type of cheese, place of origin, raw material, producers, and odor and flavor/taste sensory aspects, meanwhile inspected cheeses (artisanal and industrialized) stood out for commercialization, package, processing, gastronomy consumption, appearance, and texture aspects. It is important to point out the highlighted relation between inspected cheeses' quality and control perceptions, while non-inspected cheeses were related to traditional production and culture.

As a limitation, although the FWA technique can grasp effective and less conscious aspects of the respondents' mindsets, it does not evaluate the main drivers of the actual attitude of people to buy non-inspected cheeses. Thus, the evaluation of the attitudes by using methodologies such as Planned Behavior Theory, Conjoint Analysis, and Willing to Pay is important to explore this subject more deeply. Also, further research is necessary to study the influence of socio-demographic differences on consumer understanding of non-inspected cheeses.

REFERENCES

- AJZEN, I.; FISHBEIN, M. **Understanding Attitudes and Predicting Social Behaviour**, New Jersey: Prentice-Hall, 1980. 278 p.
- ALVES, L. C., *et al.* A. Consumers' perception of edible flowers using free word association. **Research, Society and Development**, v. 10, n. 4, e18810414011, 2021. DOI: 10.33448/rsd-v10i4.14011
- AMBROSINI, L. B.; MIGUEL, L. A.; FILIPI, E. E. Evolução e

- diferenciação dos Sistemas Agrários nos Campos de Cima de Serra: origem dos pecuaristas familiares produtores de queijo Serrano. **Desenvolvimento e Meio Ambiente**, v. 26, p. 171-187, 2012. DOI: 10.5380/dma.v26i0.26460
- AMBROSINI, L. B. *et al.* Sabor, história e economia local: percepções dos consumidores gaúchos sobre o Queijo Colonial. **Pesquisa Agropecuária Gaúcha**, v. 26, n. 1, p. 201-221, 2020. DOI: 10.36812/pag.2020261201-221
- ANDRADE, J. C. *et al.* Understanding consumers' perception of lamb meat using free word association. **Meat Science**, v.117, p. 68-74, 2016. DOI: 10.1016/j.meatsci.2016.02.039
- ANTONELLO, L.; KUPKOVSKI, A.; BRAVO, C.C. Qualidade microbiológica de queijos coloniais comercializados em Francisco Beltrão, Paraná. **Revista Thema**, v. 9, n. 1, p. 1-6, 2012.
- ARES, G.; GIMÉNEZ, A.; GÁMBARO, A. Understanding consumers' perception of conventional and functional yogurts using word association and hard laddering. **Food Quality and Preference**, v. 19, n. 7, p. 636-643, 2008. DOI: 10.1016/j.foodqual.2008.05.005
- AUAD, L. I. *et al.* Brazilian food truck consumers' profile, choices, preferences, and food safety importance perception. **Nutrients**, v. 11, n. 5, p. 1175-1189, 2019. DOI: 10.3390/nu11051175
- BALOGH, P. *et al.* Consumer willingness to pay for traditional food products. **Food Policy**, v. 61, p. 176-184, 2016. DOI: 10.1016/j.foodpol.2016.03.005
- BENINCÁ, T. *et al.* Queijo de leite cru: estudos de caso com agroindústrias e vigilância sanitária no Departamento de Sarthe, França. **Revista do Instituto de Laticínios Cândido Tostes**, v. 75, n. 3, p. 168-177, 2020. DOI: 10.14295/2238-6416.v75i3.812
- BINTSIS, T.; PAPADEMAS, P. Microbiological quality of white-brined cheeses: a review. **International Journal of Dairy Technology**, v. 55, n. 3, p. 113-120, 2002.
- CARVALHO, M. M.; LINDNER, J. D.; FARIÑA, L. O. A produção de queijo colonial artesanal no município de seara, estado de Santa Catarina, frente à legislação brasileira. **Revista do Instituto Laticínios Cândido Tostes**, v. 70, n. 5, p. 253-261, 2016. DOI: 10.14295/2238-6416.v70i5.463
- CASARIL, K. B. P. B. *et al.* Qualidade microbiológica de salames e queijos coloniais produzidos e comercializados na região sudoeste do Paraná. **Revista Brasileira de Agropecuária Sustentável**, v. 7, n. 2, p. 75-85, 2017. DOI: 10.21206/rbas.v7i2.416
- CRUZ, F. T.; MENASCHE, R. Tradition and diversity jeopardised by food safety regulations? The Serrano Cheese case, Campos de Cima da Serra region, Brazil. **Food Policy**, v. 45, p. 116-124, 2014. DOI: 10.1016/j.foodpol.2013.04.014
- CRUZ, F. T.; SCHNEIDER, S. Qualidade dos alimentos, escalas de produção e valorização de produtos tradicionais. **Revista Brasileira de Agroecologia**, v. 5, n. 2, p. 22-38, 2010.
- CUNHA, D. T.; STEDEFELDT, E.; ROSSO, V. V. The role of theoretical food safety training on Brazilian food handlers' knowledge, attitude and practice. **Food Control**, v. 43, p. 167-174, 2014. DOI: 10.1016/j.foodcont.2014.03.012
- DEUS, T. B. *et al.* *Staphylococcus aureus* and *Escherichia coli* in Curd cheese sold in the Northeastern Region of South America. **International Journal of Microbiology**, v. 2017, e8173741, 2017. DOI: 10.1155/2017/8173741
- DOTTO, D. M. R.; GONÇALVES, T. P.; IOP, S. C. F. Queijo: percepções atuais de um hábito alimentar milenar. **Agroalimentaria**, v. 21, n. 40, p. 175-186, 2015.
- DRAEGER, C. L. *et al.* Brazilian foodborne disease national survey: evaluating the landscape after 11 years of implementation to advance research, policy, and practice in public health. **Nutrients**, v. 11, n. 1, p. 40, 2019. DOI: 10.3390/nu11010040
- ELDESOUKY, A.; MESIAS, F. An insight into the influence of packaging and presentation format on consumer purchasing attitudes towards cheese: a qualitative study. **Spanish Journal of Agricultural Research**, v. 12, n. 2, p. 305-312, 2014. DOI: 10.5424/sjar/2014122-5520
- FREITAS, R. S. G.; CUNHA, D. T.; STEDEFELDT, E. Food safety knowledge as gateway to cognitive illusions of food handlers and the different degrees of risk perception. **Food Research International**, v. 116, p. 126-134, 2019. DOI: 10.1016/j.foodres.2018.12.058
- GOMES, R. A. R. *et al.* O setor de produtos lácteos. In: ZACARCHENCO, P. B.; VAN, A. G. F. V. **Brasil Dairy Trends 2020**, 1. ed. Campinas: ITAL, 2017. p. 343.
- GRUNERT, K. G. Food quality and safety: consumer perception and demand. **European Review of Agricultural Economics**, v. 32, n. 3, p. 369-391, 2005. DOI: 10.1093/eurrag/jbi011

- GUERRERO, L. *et al.* Consumer-driven definition of traditional food products and innovation in traditional foods. A qualitative cross-cultural study. **Appetite**, v. 52, n. 2, p. 345-354, 2010. DOI: 10.1016/j.appet.2008.11.008
- IBGE. Instituto Brasileiro de Geografia e Estatística. **Censo Demográfico 2022, população e domicílios, primeiros resultados**. IBGE, Coordenação Técnica do Censo Demográfico. Rio de Janeiro: IBGE, 2023. 35 p.
- IBGE. Instituto Brasileiro de Geografia e Estatística. **Pesquisa de orçamentos familiares 2017-2018: análise do consumo alimentar pessoal no Brasil/IBGE, Coordenação de Trabalho e Rendimento**. Rio de Janeiro: IBGE, 2020. 114 p.
- JUDACEWSKI, P. *et al.* Perceptions of Brazilian consumers regarding white mould surface-ripened cheese using free word association. **International Journal of Dairy Science**, v. 72, p. 585-590, 2019. DOI: 10.1111/1471-0307.12649
- KIMIIMURA, B. A. *et al.* Brazilian artisanal cheeses: an overview of their characteristics, main types and regulatory aspects. **Comprehensive Reviews in Food Science and Food Safety**, v. 18, n. 5, p. 1636-1657, 2019. DOI: 10.1111/1541-4337.12486
- LAHNE, J.; TRUBEK, A. B.; PELCHAT, M. L. Consumer sensory perception of cheese depends on context: A study using comment analysis and linear mixed models. **Food Quality and Preference**, v. 32, n. C. p. 184-197, 2014. DOI: 10.1016/j.foodqual.2013.10.007
- MAGALHÃES, M. N.; LIMA, A. C. **Noções de Probabilidade e Estatística**. 6. ed. rev. São Paulo: EDUSP, 2008.
- RIBEIRO, A. P. L. *et al.* Determining how packaging and labeling of Requeijão cheese affects the purchase behavior of consumers of different age groups. **British Food Journal**, v. 120, n. 6, p. 1183-1194. DOI: 10.1108/BFJ-02-2017-0081
- ROININEN, K.; ARVOLA, A.; LÄHTEENMÄKI, L. Exploring consumers' perception of local food with two different qualitative techniques: laddering and word association. **Food Quality and Preference**, v. 17, n. 1-2, p. 20-30, 2006. DOI: 10.1016/j.foodqual.2005.04.012
- SENGER, A. E. V.; BIZANI, D. Pesquisa de *Staphylococcus aureus* em queijo Minas frescal, produzido de forma artesanal e industrial, comercializado na cidade de Canoas/RS, Brasil. **Revista de Ciências Ambientais**, v. 5, n. 2, p. 25-42, 2011. DOI: 10.18316/259
- SIEGRIST, M.; CVETKOVICH, G.; ROTH, C. Salient value similarity, social trust and risk/benefit perception. **Risk Analysis**, v. 20, n. 3, p. 353-362, 2000. DOI: 10.1111/0272-4332.203034
- SOUZA, M. C. M.; MENASCHE, R.; CERDAN, C. Produção e consumo de alimentos em mudança: identidade cultural, tradição e modernidade. **Revista de Economia Agrícola**, v. 58, n. 1, p. 7-9, 2011.
- UELAND, Ø. *et al.* State of the art in benefit–risk analysis: consumer perception. **Food and Chemical Toxicology**, v. 50, n. 1, p. 67-76, 2012. DOI: 10.1016/j.fct.2011.06.006
- WILCOCK, A. *et al.* Consumer attitudes, knowledge and behaviour: a review of food safety issues. **Trends in Food Science and Technology**, v. 15, n. 2, p. 56-66, 2004. DOI: 10.1016/j.tifs.2003.08.004