


Consumer preference for cheeses sold at street markets

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ABSTRACT

The objective of this study was to evaluate the preference of consumers in relation to cheeses sold in open markets in the city of Montes Claros – MG. The samples were collected at the street markets in the neighborhoods of Major Prates, Delfino Magalhães and at the Central Market, and 60 samples were collected. The results were made available in graph format with the help of the Microsoft Excel 2016 program in order to elucidate the information obtained in the research. The data were explored as an experimental cross-sectional study and quantitative analysis, seeking to understand the reason for the preferences of the cheeses available at the fairs and their knowledge in relation to the GMP described by the sanitary standards, and to identify the degree of consumer satisfaction with the product purchased. According to the preference of consumers in relation to the cheeses sold, it is perceived that in relation to the environment of commercialization and consumption, it is directly related to traditions, in addition to the idea of fresher and higher quality products due to the fact that they do not go through industrial processing.

Keywords: Cheese, Quality, Preference, Consumer, Farmers' markets.

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INTRODUCTION

Milk is the 5th most traded product in volume and value, being one of the most important agricultural commodities in the world (GDP, 2017). According to Siqueira et al. (2020), dairy products and milk itself are among the cheapest sources of protein, vitamin D, calcium, and vitamin A in Brazil. De Souza (2020) reports that among dairy products, one of the main products is cheese, with high consumption demand. It is obtained by coagulating the milk and then removing the whey, being a fatty protein concentrate (BRASIL, 1996).

According to Souza (2020), one of the most consumed cheeses in Brazil is Minas frescas, with its raw dough, whitish color, soft consistency, and closed texture. Usually the product is sold in cylindrical form, with the weight ranging from around 0.5 to 3 kg. Its composition varies between 55% to 58% moisture; 17% to 19% fat; salt content ranging from 1.4% to 1.6%; and pH between 5.0 and 5.3 (IMA, 2018).

When there are failures in the process and after processing by storage and conservation of the cheese, caused by poor sanitary conditions, it is possible to have contamination by coliforms (PINTO et al., 2020). Thus, Souza (2020) points out that food made available in open markets tends to go through poor storage, can be mixed with other foods in the transport process or even at the time of exposure, without care for conservation temperature, provide favorable conditions for contamination and multiplication of microorganisms, causing risks to the consumer's health. Fresh cheeses, according to Oliveira (2020), are called informal or clandestine when they do not undergo sanitary inspection. In order for this not to happen, the cheeses go through the Federal Inspection Service (SIF), Municipal Inspection Service (SIM), or the State Inspection Service (SIE), where those approved receive the ARTE seal, created in 2019 to register producers of animal origin produced in an artisanal way, a unique seal that ensures that the cheese is artisanal, ensuring GMP and health safety, allowing sale by Brazil (Confederation of Agriculture and Livestock of Brazil - CNA, 2019). According to Pinto (2020), this guarantees the consumer the purchase of a safe product. Silva et al. (2019) report problems with contamination of cheeses throughout the production chain, worsening when they reach the end of the production chain, especially when it comes to open markets and central markets, due to marketing conditions and the lack of inspection of unregistered products.

The Montes Claros region has a well-diversified rural area, where large and small cattle breeders (dairy and beef) have come to settle (ROLDAN et al., 2020). Small farms (family farming) have been strengthened, based on the National Program for the Strengthening of Family Farming – Pronaf. which, according to Senso Agropecuário (2006), has 18,702 small agricultural establishments, which corresponds to an area of 38,336 hectares, and these are responsible for a large part of the municipality's supply, the Municipal Market stands out as a center for commercialization and socialization (ZOCCAL, 2019). According to (SANDOVAL; RIBEIRO, 2021), the production of



dairy products on family farming properties generates the development of rural areas, reducing poverty, also contributing to the cultural heritage of the region.

Considering the economic and social importance, and also the need for knowledge about the characteristics of the product. Thus, this study aims to evaluate consumer preference in relation to cheeses sold in open markets in the city of Montes Claros – MG.

MATERIAL AND METHODS

The project was submitted to the Research Ethics Committee. The National Health Council (CNS) No. 466, which deals with research involving human beings, guarantees the subjects involved in the sample data preservation and reliability for participating in the research. The information obtained was kept confidential and used only for academic and scientific purposes, being eliminated after the general specification of the data presented only in percentage and comparisons to other bibliographies in a significant way in number. After approval by the CEP, under opinion number: 5,877,117, the research was initiated in the city of Montes Claros, located in the Upper Middle São Francisco Basin, in the north of the State of Minas Gerais. (IBGE, 2022).

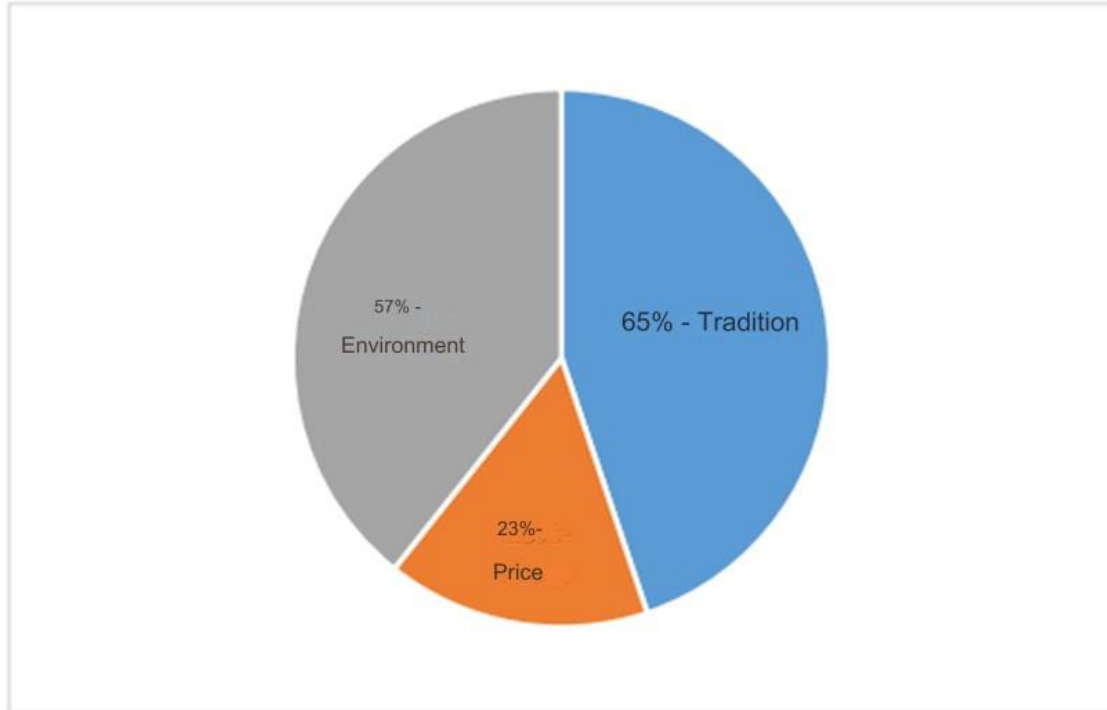
The samples were collected in commercial points such as: street markets in the Major Prates, Delfino Magalhães neighborhoods and in the Central Market. A total of 60 samples were collected, 20, 15 and 25 in the respective open markets between merchants and consumers. Merchants and consumers of cheese from the open markets of the city of Montes Claros-MG were part of the study, without distinction of sex and race aged over 18 years. Questionnaires with structured questions were applied, which made it possible to verify the profile of merchants and consumers in order to understand the reason for the preferences of the cheeses available at the fairs and their knowledge in relation to the GMP described by the sanitary standards, data on cheese consumption and identification of the degree of satisfaction of consumers regarding the product purchased.

A total of 60 questionnaires were randomly applied at equidistant points, where the research was presented, informing them of the objectives, method and procedures of the research, so that those who voluntarily agreed to participate signed the Free Consent and Clarification Form. 20 questionnaires were applied at the street market in the Major Prates neighborhood, 15 in the Delfino Magalhães neighborhood and 25 at the Central Market in the city of Montes Claros – MG. The questionnaires were applied on the first three Sundays of February 2023, at different times (7-9 am, 9-11 am and 11-13 pm), covering the entire length of the fair, in order to ensure representativeness and non-intentionality in the process of choosing the interviewees. With the help of the Microsoft Excel 2016 program, the collected data was converted into graphs. The samples were obtained from a sample size calculation with a 90% confidence interval (CI) and a margin of error of 5%.

RESULTS AND DISCUSSION

When the merchants were asked about the reasons for their preference to sell their cheeses in the open markets (graph 1), the answers varied between tradition, price and environment.

Graph 1. Merchants' preferences in selling cheese at street markets.



Source: Field research.

Belvilaqua et al., 2020 fairgoers who offer more specialized products seek recognition in order to add value to their final product. In this way, consumers show preference in buying at street markets, since they are quality products differentiated by flavor and pleasure. In this way, merchants build the identity of their product (ARAÚJO, 2018).

When consumers were asked why they prefer street markets to buy cheese (Graph 2), the interviewees attribute it to the quality of the product and the non-use of preservatives. According to Araújo (2018), consumers who produce products from street markets are healthier, without chemical components, good quality and move the local economy. Belvilaqua et al., (2020) report that street markets continue to be one of the main means of preference for food purchases. Consumers link food bought at the market to family agricultural production, with low pesticide use, and characterize it as a fresh product. In addition, the open market allows a direct relationship between the producer and the final consumer, making it possible to more easily identify needs and desires in order to improve aspects of production (CARVALHO; GROSSI, 2019).

Graph 2. Consumers' preference to consume cheeses from street markets



Source: Field research.

Merchants and consumers were asked about GMP, milk used in the manufacture of cheeses, use of caps, gloves and masks, and how to store cheese in street markets (Table 1), and there is a lack of information from merchants and consumers about adequate conditions for the sale of the final product.

Table 1. Knowledge of merchants and consumers about GMP, type of milk used in cheese production and use of sanitary practices for cheese conservation.

INTERVIEWED	GMP	Milk used in the manufacture of cheese	Use of cap, gloves and mask	Cheese storage at the market
Merchants (43%)	Knows (50%)	Raw milk (100%)	Rarely uses (0%)	Ambient temperature (77%)
	Don't know (23%)	Pasteurized milk (0%)	Frequently use (92%)	Refrigerator (19%)
	Have you heard of it (27%)	Don't know (0%)	Doesn't use (8%)	Cooler box (4%)
Consumers (57%)	Know (12%)	Raw milk (50%)	Rarely uses (14%)	Ambient temperature (65%)
	Don't know (26%)	Pasteurized milk (6%)	Frequently use (15%)	Refrigerator (23%)
	Have you heard of it (62%)	Don't know (44%)	Doesn't use (71%)	Cooler box (12%)

Source: Field research.

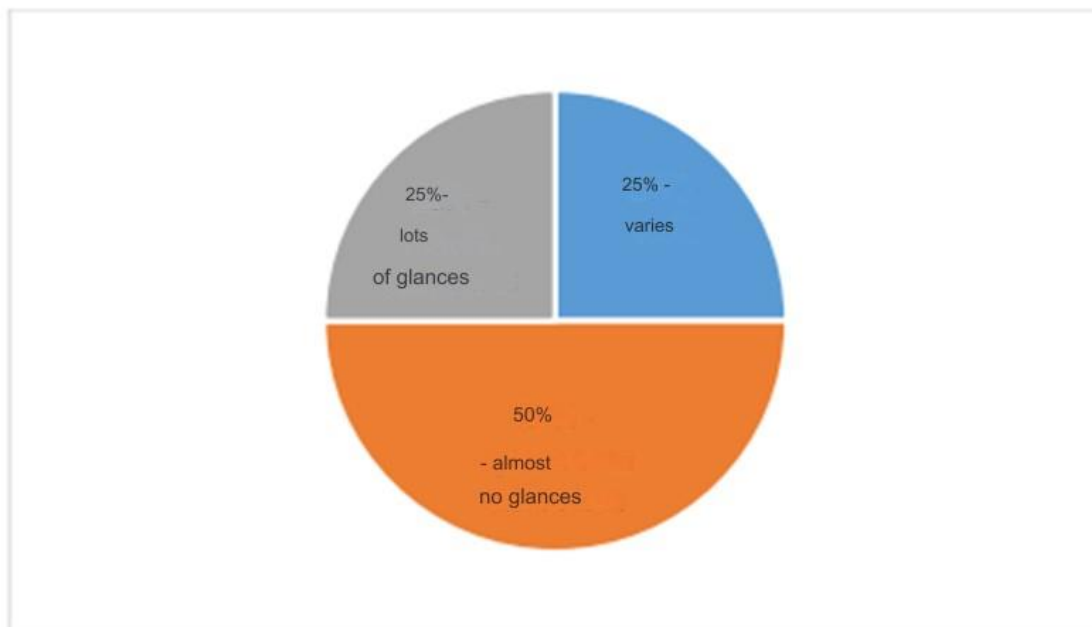
Silva et al., (2022), cite that artisanal cheeses, although known and valued by the consumer, did not always have a guarantee of food safety because they were produced with raw milk, poorly matured, outside the legislation, without quality control and sold informally. Araújo (2018) reinforces that Minas frescal cheese is very susceptible to contamination since its processing has a lot of manual

contact. As it is a perishable food, it is important to properly preserve the cheese and cool it, in addition to monitoring and raising awareness among the population.

The Ministry of Agriculture, Livestock and Food Supply (MAPA) (BRASIL, 2021), recommends that cheeses should always be stored under refrigeration to increase their shelf life, considering that the low temperature inhibits the growth of contaminating microorganisms, in addition to protecting cheeses against dust and the attack of insects and rodents.

Regarding the identification of the preference of the type of cheese purchased and the requirements used by consumers to evaluate the quality and choice of cheese in the open markets in the city of Montes Claros-MG, the majority chose cheeses with few eyes (Graph 3).

Graph 3. Cheese preference in relation to the number of eyes.

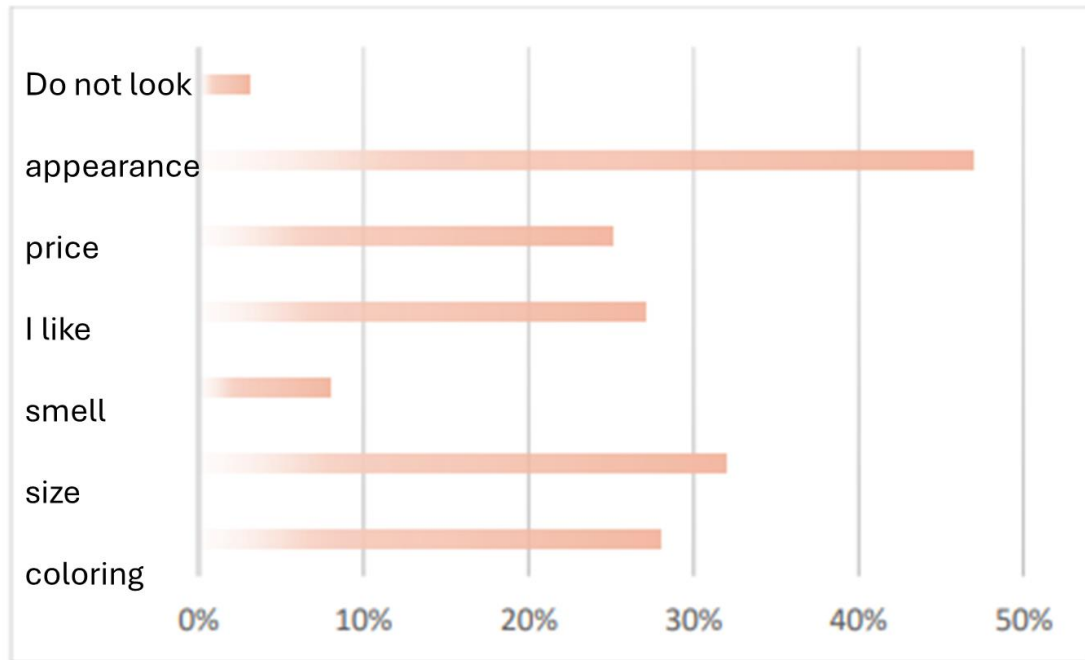


Source: Field research.

Although the eyes (holes) observed in cheeses may have a mechanical origin, there is a possibility that they were caused by the presence of bacteria. During the cheese production process, they produce gases, leading to the formation of eyes, identified directly on the product (CARVALHO; GROSSI, 2019). To obtain an excellent cheese, it is important to emphasize the quality of the milk that is used for its manufacture. Sandoval; Ribeiro (2021) states that the milk used in the preparation of cheese must be subjected to pasteurization, which aims to eliminate pathogenic microorganisms (although some of them can still survive the heat treatment applied), in addition to reducing the number of microorganisms in general as much as possible.

Regarding the factor for choosing cheese (Graph 4), of the 60 interviewees, the answers ranged from: Appearance, price, taste, smell, size and color.

Graph 4. Preference of cheese at fairs according to consumer evaluation

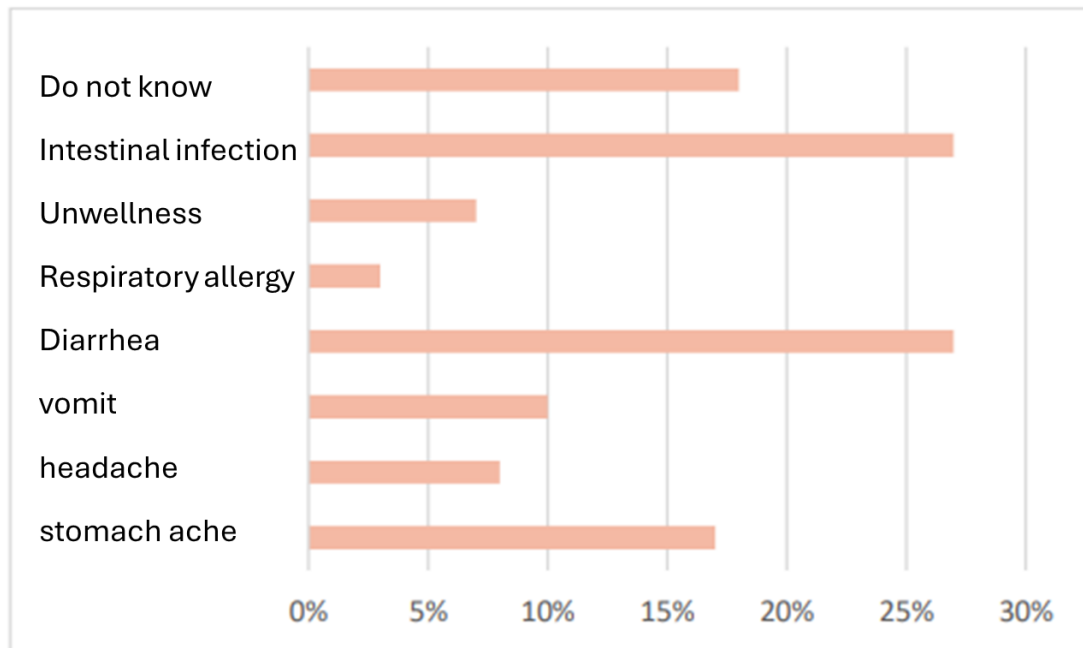


Source: Field research.

According to Benincá et al. (2022), consumer preference comes from the characteristic flavor of the product, due to the artisanal manufacturing process, in addition to referring to a traditional consumer issue. There is also a tendency for consumers to opt for nutritional issues related to health, as they consider products with a lower degree of industrialization to be healthier (SOUZA, 2018). Bezerra (2018) says that taking into account the consumers of Minas Frescal cheese, their preference is for its appearance and sensory characteristics (appearance, smell, taste, color).

Regarding the side effects caused by cheese (Graph 5), the following responses were observed: Belly pain, headache, vomiting, diarrhea, colic, malaise, intestinal infection and do not know (Graph 5).

Figure 5. Symptoms of consumption of contaminated gall oak.



Source: Field research.

Araújo (2018) reports that the unwanted pathogenic microorganisms present in food and that cause toxoinfection are bacteria such as *Staphylococcus aureus*, *Escherichia spp.*, *Aeromonas spp.*, *Salmonella spp.* and *Listéria spp.* This contamination can be due to the raw material of the milk or to the lack of hygiene during production and adequate conditions during the storage of Minas frescal cheese. In Brazil, there are no epidemiological data, but it is presumed that the rates of food poisoning of microbial origin are high, although few cases are reported in the literature. The symptoms of enteric disease are mainly diarrhea, vomiting, fever, abdominal cramps, nausea, flatulence, and malaise (SOUZA, 2018). The prevention and control of this disease depend on the surveillance of health services and education on food safety concepts.

CONCLUSION

Marketing and consumption is directly related to family traditions.



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