

Identification of the Kombucha consumer profile in Fortaleza-CE.

IDENTIFICAÇÃO DO CONSUMIDOR DE KOMBUCHA EM FORTALEZA-CE.

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ABSTRACT

Made from the fermentation of sweetened tea from the *Camellia sinensis* herb by a symbiotic culture of bacteria and yeasts, Kombucha has been earning place in the Brazilian and international scene for its benefits and its possible ability to assist in human well-being. This fermented beverage has shown significant growth in the beverage market and, because of this, the present work aimed to carry out a data survey on the set of behavioral characteristics of kombucha consumers in the city of Fortaleza-CE and metropolitan region and the relationship of these individuals with the drink; as well as identifying the attributes that influence the purchase decision and prospecting the population's acceptability for fermented beverages such as kombucha. To carry out the research, the Google forms platform was used, and these forms were distributed through social networks following the snowball technique. XLSTAT software, Maxdiff test and Excel were used for data analysis. Thus, it was found that most kombucha consumers are women, young people, with an income between 1 and 4 minimum wages, single, with higher education and residents of the noblest areas of the city. The attributes that were considered decisive for the purchase decision were: health benefits, probiotic, flavor, immunity increase, chemical additives absence and high antioxidant content. In this way, it is expected that this study will contribute with a direction to kombucha producers for the elaboration of new products directed to a specific public.

Keywords: consumer behavioral characteristics; market investigation; kombucha acceptability.

RESUMO

Elaborado a partir da fermentação do chá adoçado da erva *Camellia Sinensis* por uma cultura simbiótica de bactérias e leveduras, a kombucha vem ganhando espaço no cenário brasileiro e internacional por seus benefícios e sua possível capacidade de auxiliar no bem-estar humano. Essa bebida fermentada tem apresentado significativo crescimento no mercado de bebidas e, por conta disso, o presente trabalho teve como objetivo realizar um levantamento de dados sobre o conjunto de características comportamentais dos consumidores de kombucha na cidade de Fortaleza-CE e região metropolitana e a relação desses indivíduos com a bebida; bem como identificar a relevância dos atributos que influenciam na decisão de compra e prospectar a aceitabilidade da população para bebidas fermentadas como a kombucha. Para a realização da pesquisa foi utilizada a plataforma de formulários do Google, em que esses formulários foram distribuídos pelas redes sociais seguindo a técnica bola de neve. O software XLSTAT, teste de Maxdiff e Excel foram utilizadas para análise dos dados. Assim, obteve-se que os consumidores de kombucha são em sua maioria, mulheres, jovens, com renda entre 1 e 4 salários-mínimos, solteiros, com ensino superior completo e moradores das áreas mais nobres da cidade. Já os atributos que foram considerados determinantes para a decisão de compra foram: benefícios à saúde, probiótico, sabor, aumentar a imunidade, não conter aditivos químicos e elevado teor de antioxidantes. Dessa forma, espera-se que esse estudo contribua com um direcionamento aos produtores de kombucha para elaboração de novos produtos direcionados a um público específico.

Palavras-chave: características comportamentais do consumidor; investigação de mercado; aceitabilidade da kombucha.

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INTRODUCTION

Kombucha is a fermented beverage made from *Camellia sinensis* herb tea, sugar, and a symbiosis of bacteria and yeast, resulting in a refreshing and bitersweet beverage. Originated in Asia, this fermented beverage has its first written record around the year 400 B.C. in a Chinese dictionary. The drink began to spread around the world from Japan by the physician Kombu, who used it to treat the digestive problems of the Emperor Inkyo during the Qin Dynasty. On the European continent, it first became popular in Russia and then spread to Eastern Europe, in countries such as Germany, France, the French North African domains, and Italy. However, the decline in consumption came during World War II, in which there were widespread shortages of tea and sugar. Only in the 1960s kombucha has become popular again after Switzerland claimed that the fermented stuff had similar functionality to yogurt (JAYABALAN ET AL, 2014; SANTOS, 2016).

Keeping in this perspective, when analyzing the benefits present in kombucha, considering the continuous and controlled consumption, we can emphasize the antioxidant properties, as well as aid in regulating the intestinal microbiota and to strengthen the immune system (YAMAZAKI, 2015). Considering the antioxidants present in kombucha we can mention vitamin C and phenolic compounds such as catechins, gallic acid, caffeic acid, rutin and chlorogenic acid. Studies indicate that fermented samples inhibited the DPPH free radical by 92.91%, unlike non-fermented samples that inhibited only 69.93% (MENDONÇA ET AL, 2020).

At the present time, there is a greater awareness about the relationship between food and good body functioning, in this way; it is possible to notice a greater concern with health, with attempts to adopt healthier eating habits and with a greater insertion of functional foods in the diet (BRUSCHI; SOUSA; MODESTO, 2018). Thus, kombucha has been earning more and more place in the international and national spheres. Given that, it is considered one of the products that presented the highest market growth among the beverage sector. It is worth mentioning that only in the United States, the country with the fourth largest number of searches using the term 'kombucha', according to Google Trends (GOOGLE TRENDS, 2020A), more than 5 thousand jobs were generated directly with the kombucha industry. On the Brazilian scenario,

the estimate for monthly production is 500 thousand liters and a turnover of 11 million reais (SUHRE, 2020). Also, according to Google Trends (GOOGLE TRENDS, 2020B), it is possible to observe that in Brazil in the last five years there was a considerable increase in searches for the term 'kombucha' in the search tool. Santa Catarina, Rio Grande do Sul, and Paraná, respectively, are among the states that most search in Brazil for the term 'kombucha'. Due to the growing interest in the fermented and with the goal of meeting the demands of the food industry, after public inquiry conducted by the Ministry of Agriculture, Livestock and Supply (MAPA), the Normative Instruction n°41/2019 was published by the Official Gazette of the Union in September 2019 aiming to establish the standard of identity and quality of kombucha in Brazil (BRASIL, 2019; SUHRE, 2020). Therefore, when pondering on the growth of this beverage in Brazilian space, it is essential to conduct a study on the kombucha consumers' profile, as well as the priorities in the purchase act that guide these individuals. Thus, the Best-Worst Scaling (BWS) method, also called Maximum Difference Scaling (MAXDIFF) stands out as a tool that enables the delimitation of relevant attributes to the buyer. Developed in 1990 by Louviere and Woodworth, the BWS, by indicating which element is better or more important and which is worse or less important by the respondents, aims to identify the degree of importance, in a hierarchical manner, of key elements of the product studied from the consumer's perspective (FINN; LOUVIERE, 1992; DINIZ ET AL, 2017).

So, this work proposed to verify the set of behavioral characteristics of kombucha consumers in the city of Fortaleza and metropolitan region and the relationship of these individuals with the beverage; as well as to identify the relevance of the attributes that influence the purchase decision of this fermented beverage and to prospect the acceptability of the population for fermented beverages such as kombucha. Thus, it is expected to help producers of kombucha to define and understand their target audience in the capital of Ceará.

METHODOLOGY

The protocols for carrying out this research were previously approved by the Permanent Committee on Ethics in Research Involving Human Beings

of the Federal University of Ceará (CERTIFICATE OF PRESENTATION OF ETHICAL APPRECIATION: 41822420.2.0000.5054), as established by Resolution nº 466/12, of the National Council of Health (BRASIL, 2012).

The sample space defined for the research was the city of Fortaleza and its metropolitan region, which has 4,167,996 inhabitants (IBGE, 2020). For the definition of the values available in the present work, the number of inhabitants of Fortaleza and its metropolitan region was calculated. So, it was established that the minimum number of participants for the survey was 385 individuals, considering a confidence level of 95% and margin of error of 5% (SURVEY MONKEY, 2020).

For data collection, a questionnaire was prepared using the Google Forms platform and applied online. This, in turn, was disclosed in social networks such as WhatsApp, Facebook, Instagram and Twitter between the months of August and September 2020. Following the snowball technique, people who had access to the survey were invited to also share it with other residents of Fortaleza or the metropolitan region who were on their contact list, so that more answers could be collected.

The questionnaire was divided into twelve sections; in the first section the Informed Consent Form (ICF) was made available, as well as the confirmation of reading and acceptance of the ICF. The second, third, and fourth sections were composed of socio-demographic questions, such as location (FORTALEZA OR THE METROPOLITAN REGION), neighborhood, age, income, education, gender, and marital status. In section 5, the participants should mark whether or not they knew kombucha. In case of a negative answer, the questionnaire was ended. Section 6 was composed of two yes/no questions, the first regarding knowledge of the benefits of the beverage, and the second whether the participants had ever consumed it. Participants who answered they had never consumed the beverage were directed to the seventh section, in which they were asked to justify their answer. For those who had already consumed the beverage, they were asked about the frequency of consumption. In sections nine and ten, questions were asked about consumption preferences, such as the origin they liked best (handmade, industrial), the type of herb preferred in case of replacement of *Camellia sinensis*, which packaging, as well

as its type and color, and, finally, what information the participants would like to find on the kombucha packaging. The eleventh section was intended for the evaluation of the elements related to the consumer's purchase decision using the BWS method.

Thus, for the construction of the BWS method, 10 attributes were selected to perform the combinations, as follows: high antioxidant content, flavor, probiotic, health benefit, brand, good option to replace soda, price, chemical additives absence, homemade product and immunity boost. The attributes were distributed in sets of five, so that the participant had to select only one attribute for the "most important" term and another attribute for the "least important" term within each group. To ensure that all attributes appeared the same number of times, XLSTAT software was used. The attributes were distributed in what Google Forms characterizes as "rows", while the terms "least important" and "most important" were distributed in columns. In this way, it was possible to restrict the participant's response to only one answer per column, thus ensuring that there was no double selection of elements in the same column.

Descriptive statistics techniques were used to present the data, such as frequency, percentage, mean and standard deviation.

The analysis of the data collected by the BWS scale was performed using the Maxdiff test. The data were processed using Excel software and XLSTAT 2022 version 1.0 (ADDINSOFT 2020). XLSTAT statistical and data analysis solution. New York, USA.

RESULTS AND DISCUSSION

Socioeconomic characterization

The socioeconomic profile was drawn considering only the participants who had already consumed the product. Thus, based on the data collected, the consuming public is mostly female (60.09%), with complete college education (71.67%), and single (57.51%). Most of the public who said they had already consumed kombucha belonged to the age groups of 20 to 29 years old and 30 to 39 years old, representing 37.3% and 36.5%, respectively. As for income, as shown in Table 5, it was observed that 25.32% have one to four minimum wages (up to 4,179 reais), followed by 17.17% less than one minimum wage (up to 1,045 reais) and

14.59% above 10 minimum wages (up to 10,450 reais). As for income, it was noted that 25.32% have from one to four minimum wages (up to 4,179 reais), followed by 17.17% with less than one minimum wage (up to 1,045 reais) and 14.59% above 10 minimum wages (up to 10,450 reais). According to Table 1, it was found that 21.0% of the research participants are residents of regional III, which correspond, according to the Fortaleza City Council (2019), to the neighborhoods Aldeota, Meireles, Papicu, Varjota, De Lourdes, Vicente Pinzon, Cais do Porto, Mucuripe, São João do Tauape, Dionísio Torres and Joaquim Távora. Aldeota and Meireles were the districts with the highest number of individuals consuming the beverage. Regional V and VIII were right behind with 17.2% and 12.9%, respectively. Regional X was last, with 0.2% of drinkers. While in the metropolitan region of Fortaleza it was possible to verify a public of 5.6% of kombucha consumers.

closest to 1 the best in development and the closest to 0 the worst. Thus, the fact that industrially marketed Kombucha is priced around 20 reais, 300 mL of the drink (MESQUITA, 2020), may justify the fact that the largest number of consumers belong to the Aldeota and Meireles neighborhoods, as well as the fact that people with income between 1 and 4 minimum wages take the first place in the questionnaire applied and those with income above 10 minimum wages are in third place. On the other hand, when it comes to home production of Kombucha, the ingredients are only mineral water, sugar, green or black tea, and the starter cologne, which are considerably cheap and accessible to the population. (SANTOS, 2016; YAMAZAKI, 2015) This makes homemade production affordable and possibly justifies the consumption of the population that has access to less than one minimum salary.

The first Brazilian food guide was released by the Ministry of Health in 2006 (BRASIL, 2019), demons-

Table 1: Participants who have already taken kombucha divided into their respective regions of residence.

Region (n=233)	Number (percentage of total responses) %
Metropolitan Region	13 (5,6)
SER I	12 (5,2)
SER II	10 (4,3)
SER III	49 (21,0)
SER IV	29 (12,4)
SER IX	3 (1,3)
SER V	40 (17,2)
SER VI	14 (6,0)
SER VII	13 (5,6)
SER VIII	30 (12,9)
SER X	2 (0,9)
SER XI	13 (5,6)
SER XII	5 (2,1)

Source: The Author

According to the Institute for Research and Economic Strategy of Ceará (IPECE), the neighborhoods Aldeota and Meireles, ranked fifth and first, respectively, among the richest neighborhoods of Fortaleza in 2010. As well, according to the Anuário of Ceará, the human development index of the Meireles neighborhood is 0.953 and of the Aldeota neighborhood is 0.867. It is imperative to mention that the classification varies from 0 to 1, being the

trating that the concern with healthy eating and well-being is a considerably recent and growing practice among Brazilians. Thus, it can be considered that the justification for the higher consumption of kombucha by people between 20 and 39 years old reflects the rise in the collective consciousness about the importance of the quality of what is ingested, which primarily reached this younger audience. It is important to note

that kombucha is a beverage known primarily for its health benefits.

Regarding product knowledge, 72.29% of participants (347 people) said they knew what kombucha is. Among these, 67.15% declared having already consumed the drink (233 individuals). This amount was used to define the research profile, as previously mentioned.

Consumer characteristics

Among the group of respondents who said they had already consumed kombucha, 76.82% consumed it occasionally, while only 7.73% of the participants consumed it daily.

Of the total of 347 participants who know what kombucha is, 32.85% claim to have never consumed the drink. Among the reasons that justified the non-consumption, the most frequent, respectively, were: difficult access to the ready-made beverage, because I don't know how to make it, because I don't get enough information to motivate consumption, because I don't have access to the starter cologne, because I think it is difficult to make the beverage at home, because I think it is hard to keep the cologne alive, price, and not liking the traditionally used herb.

With this survey, we can notice that most of the answers are linked to the little information disseminated about what kombucha is, how to produce it, and its preservation. According to Batista et al., 2022, the lack of information about the product, its quality, and safety may condition the purchase and consumption. Thus, more literacy is needed in this area, as well as the definition of standards that ensure the quality, efficacy, and safety standards of kombucha.

Regarding the herb traditionally used and the possibility of changing this basic element, the 347 participants were asked whether they would keep or change *Camelia sinensis* for other herbs. If they could make the change, which herbs would they like the drink to be made from. According to Table 2, the results were: lemon grass (44.09%), mint (43.23%), chamomile (27.09%), anise (22.48%), lemon balm (20.75%), yerba mate (20.17%), and boldo (4.32%). The remainder, equivalent to 16.14%, said they would not make any changes.

Regarding the origin of the drink, 76.08% of respondents stated that they preferred homemade kombucha to the detriment of industrial kombucha.

As for the packaging, the participants packaged it in transparent glass bottles (80.40%). Glass, therefore,

is considered, among the materials used for food packaging, the most inert material. It is completely impermeable to gases, as well as being fully recyclable so that it is possible to fully preserve its primary characteristics (CABRAL, 1984). In addition, kombucha produces organic acids because of fermentation, and for this reason it is recommended that glass packaging be used for its best packaging. Then, considering the inertia of glass, there is no interaction between the glass packaging material and the kombucha (WATAWANA, 2015).

In addition, 82.71% of the public showed a greater interest in returnable packaging to the detriment of disposable packaging for kombucha packaging. It is worth noting that reverse logistics, which addresses the returnable packaging, is a strategy that aims to operate and control the flow of post-consumer waste return to the production environment. This action, along with other environmental preservation actions for the future, has been thought and consolidated after the 1992 Conference on Environment and Development (ECO-92), in which the term "sustainable development" was consolidated, with the objective of uniting environment and development, along with the Earth Summit (Rio+10) and the Triple Bottom Line (TBL) concept. Rio+10 established sustainable development in three parts which are economic, social and environmental, and John Elkington - creator of the TBL concept - in which he presented the tripod people, planet and profit. Thus, returnable packaging is one of the actions presented to work in a sustainable way from the exposed concepts, because it generates economic return and environmental preservation by reducing waste disposal (GUARNIERE, 2014).

Also from the bottle perspective, the most desirable information on kombucha labels is list of ingredients, shelf life, storage method, manufacturing date, product origin, sugar content, health benefits, alcohol content, and brand name.

Relevance of attributes for purchase decision

Table 3 shows the number of times each attribute was mentioned as most important (COUNTBEST) and least important (COUNTWORST) by the interviewees. Based on this data, the relevance level was calculated, which corresponds to the number of times each attribute was mentioned as most important (COUNTBEST), subtracting the number of times this same attribute was mentioned as least important (COUNTWORST).

Table 2: Changes that participants who know what kombucha is indicated they would make to the base herb, also including those who would not make any changes.

Possible herbs	Number (percentage of total responses) %
Boldo	15 (4,32)
Chamomile	94 (27,09)
Fennel	153 (44,09)
Lemon Balm	72 (20,75)
Sweet herb	78 (22,48)
Mate herb	70 (20,17)
Mint	150 (43,23)
Wouldn't make any changes	56 (16,14)

Source: The Author

Then, the standard score was calculated, which corresponds to the relevance level divided by the number of times each attribute appears in the combination (5 times), multiplied by the number of questionnaires answered (347 responses). The data were obtained according to the methodology described by DINIZ et al. (2016).

Tables 3 and 4 present the relevance level and the standard score for each attribute.

(ten) attributes evaluated, presented a negative relevance level (Table 4). Therefore, the kombucha being homemade, the price, the possibility of replacing soda and the brand were not considered decisive attributes for the purchase and therefore were classified as important attributes. Diniz et al. (2016) also indicated price and brand as only important and not decisive attributes for wine purchase from the Best-Worst scale.

The attributes: health benefits, probiotic, flavor,

Table 3: Countbest and Countworst

Attributes	Countbest	Countworst
High antioxidant content	206	100
Flavor	439	76
Probiotic	534	38
Health benefits	698	35
Brand	24	1180
Good option to replace soda	52	1169
Price	163	204
No chemical additives	440	100
Handmade product	143	150
Increase immunity	420	58

Source: The Author

To evaluate the degree of relevance of the attributes in relation to the influence on the decision to purchase kombucha, the classification of Espartel (1999) was used. Thus, the attributes were divided into important (attributes that are not determinant for the product purchase but are taken into consideration at the choice time) and determinant (attributes that influence the decision to purchase the product). Through the Best-Worst scale, it was verified that 4 (four) out of the 10

immunity boost, chemical additives absence and high antioxidant content were considered determinants for the kombucha purchase, since they showed a positive relevance level, according to Table 5. Therefore, the decision to purchase kombucha is mainly associated with the possible health benefits that the consumption of the beverage can offer. Walker (2021) also observed the same behavior when analyzing kombucha acceptance, characteristics, and consumer preferences of the beverage.

Table 4: Attributes of kombucha rated as important.

Attributes	Level of Relevance	Standard Score
Handmade product	-7	-0,0040
Price	-41	-0,0236
Good option to replace soda	-1117	-0,6438
Brand	-1156	-0,6663

Source: The Author

According to Bruschi et al. (2018), the population has been seeking a healthier diet and a change in lifestyle, reflecting the increased demand for functional foods, which are becoming increasingly popular in the market. Among functional foods, probiotics, which are those that contribute to digestive health, are among the most searched.

claims have not yet been scientifically proven, and most have been studied only in experimental models, with an absence of scientific evidence in human models. Thus, more robust studies are needed to prove the potential health benefits of kombucha intake (BATISTA, et al., 2022; JAYABALAN et al., 2014).

It is important to point out that the Brazilian legis-

Table 5: Attributes of kombucha classified as determinants.

Attributes	Level of Relevance	Standard Score
Health benefits	663	0,3821
Probiotic	496	0,2859
Flavor	363	0,2092
Increase immunity	362	0,2086
Contains no chemical additives	340	0,1960
High antioxidant content	106	0,0611

Source: The Author

Thus, the list of benefits related to the ingestion of kombucha is extensive, and includes: blood detoxification, lowering cholesterol levels, reducing atherosclerosis by regenerating the cell wall, lowering blood pressure, reducing inflammatory problems, relieving the arthritis and rheumatism symptoms, normalizing intestinal activity, balancing the intestinal microbiota, curing hemorrhoids, reducing obesity, and regulating appetite, prevents bladder infection and reduces kidney calcification, increases the body's resistance to cancer, has an antibiotic effect against bacteria, viruses, and yeast, improves the immune system, relieves bronchitis and asthma, reduces menstrual disorders and menopausal heat waves, reduces stress, neurological disorders, and insomnia, relieves headaches, fights off aging, among other effects (DUFRESNE, FARNWORTH, 2000).

However, although kombucha is considered a natural and healthy product, many nutritional

lation that defines the identity and quality standards of Kombucha throughout the national territory through Normative Instruction No. 41, of September 17, 2019, prohibits any type of health claim on the beverage's label (BRASIL, 2019).

CONCLUSION

From this study it was possible to conclude that kombucha consumers in the city of Fortaleza and the metropolitan region are mostly female, young, with an income between 1 and 4 minimum wages, single, with a complete college degree and that they are concentrated in the wealthiest areas of the city. Just over half of the interviewees have already consumed kombucha and the low frequency of consumption was justified by the difficulty of access, preparation and maintenance of the beverage, the lack of information, and the price. The infusions of lemon grass, mint, chamomile, fennel, and mate were the most cited options among the

interviewees as a possible replacement for green tea in the kombucha preparation.

The attributes that were considered determinant for the purchase decision were: health benefits, probiotic, flavor, immunity boost, chemical additives absence and high antioxidant content. The attributes: kombucha being handmade, price, possibility of soda replacement and brand were not considered decisive for the purchase.

Thus, this study provides important data for kombucha producers, helping in the target audience characterization, in the direction of advertising campaigns and in the development of new products based on kombucha, with new raw materials, which meet the consumers needs. In addition, it is also important to develop strategies for the public who do not know kombucha, investing in campaigns that provide greater education to the population about the benefits of consuming the drink, considering that this type of action can increase the reach of the product among the public who do not consume it and among those who consume it infrequently, contributing to further expansion of BATISTA, P.; PENAS, M.R.; PINTADO, M.; OLIVEIRA-SILVA, P. Kombucha: Perceptions and Future Prospects. *Foods*, 2022, 11, 1977. Retrieved from <<https://doi.org/10.3390/foods11131977>> Access in 10 jan. 2020.

BRASIL, Conselho Nacional de Saúde. Resolução de Diretoria Colegiada (RDC) no 466, de 12/12/2012. Aprova as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Brasília, DF, [S. l.], 2012.

BRASIL. Ministério da Agricultura, Pecuária e Abastecimento. Ministério do Meio Ambiente. Instrução Normativa Mapa nº 41, de 17/09/2019. Resolve estabelecer o Padrão de Identidade e Qualidade da Kombucha em todo o território nacional.

BRUSCHI, Jefferson dos Santos; SOUSA, Rogéria Cristina dos Santos; MODESTO, Karina Ribeiro. O RESSURGIMENTO DO CHÁ DE KOMBUCHA. *Revista de iniciação Científica e Extensão*, Goiás, v. 1, n. 1, p.162-168, jul. 2018.

CABRAL, Antonio Carlos Dantas et al. *Apostila de embalagem para alimentos*. Campinas, 1984. 335 p.

DINIZ, Nayara et al. Consumo de vinhos na cidade do Recife (BRASIL): uma pesquisa da relevância dos atributos da bebida no momento da compra. *Revista Brasileira de Pesquisa em Turismo*, v. 11, n. 1, p. 89-108, 2017.

FORTALEZA. Índice de desenvolvimento humano - Anuário do Ceará, 2010. Retrieved from:< <https://www.anuariodoceara.com.br/indice-bairros-fortaleza/> > Access in: 23 feb. 2020.

DUFRESNE, C.; FARNWORTH, E. Tea, Kombucha, and health: a review. *Food research international*, v. 33, n. 6, p. 409-421, 2000.

ESPARTEL, L. B. Atributos de produto e motivações de compra no mercado jornalístico do Rio Grande do Sul. *Dissertação de Mestrado em Administração*, Universidade Federal do Rio Grande do Sul, Porto Alegre. 1999.

FINN, A., & Louviere, J. J. (1992). Determining the Appropriate Response to Evidence of Public Concern: The Case of Food Safety. *Journal of Public Policy & Marketing*, 11(2), 12–25. doi:10.1177/074391569201100202.

FORTALEZA (MUNICÍPIO), 2019. Lei Complementar nº 0278, de 23 de dezembro de 2019. Dispõe sobre a organização e a estrutura administrativa do Poder Executivo Municipal e dá outras providências. Fortaleza, CE, 27 dec. 2019. p. 11-14.

GUARNIERI, Patricia. *Logística reversa*. Clube de Autores (managed), 2014.

Google Trends, 2020a. Ranking de países que buscam pelo termo kombucha. Retrieved from: <https://trends.google.com.br/trends/explore?date=today%205-y=kombucha>. Access in 15 aug. 2020.

Google Trends, 2020b. Busca realizada por brasileiros pelo termo Kombucha. Retrieved from: [:https://trends.google.com.br/trends/explore?date=today%205-y&geo=BR&q=kombucha](https://trends.google.com.br/trends/explore?date=today%205-y&geo=BR&q=kombucha). Access in 15 aug. 2020.

IBGE. cidades e estados, 2020. Retrieved from: <https://www.ibge.gov.br/cidades-e-estados/ce/fortaleza.html>. Access in 21 sep. 2020.

IPECE. Perfil municipal de Fortaleza, Tema VII: Distribuição parcial da renda pessoal. 2012. Retrieved from: https://www.ipece.ce.gov.br/wp-content/uploads/sites/45/2018/09/Ipece_Informe_42_outubro_2012.pdf. Access in 21 sep. 2020

JAYABALAN, Rasu et al. A review on kombucha tea—microbiology, composition, fermentation, beneficial effects, toxicity, and tea fungus. *Comprehensive Reviews in Food Science and Food Safety*, v. 13, n. 4, p. 538-550, 2014.

MENDONÇA, Gislane Romano et al. PROPRIEDADES ANTIOXIDANTES E EFEITOS ANTIMICROBIANOS DA KOMBUCHA: REVISÃO DA EVIDÊNCIA CIENTÍFICA. *Revista Contexto & Saúde*, v. 20, n. 40, p. 244-251, 2020.

MESQUITA, Renata. O kombucha está em todo lugar. Estadão, 2017. Retrieved from: <https://paladar.estadao.com.br/noticias/bebida,o-kombucha-agora-esta-em-todo-lugar,70001830341>. Access in 22 sep. 2020

SANTOS, Mafalda Jorge dos. Kombucha: caracterização da microbiota e desenvolvimento de novos produtos alimentares para uso em restauração. 2016. Tese de Doutorado.

SUHRE, Tais. Kombuchas produzidas e comercializadas no Brasil: características físico-químicas e composição microbiana. 2020.

SURVEYMONKEY, 2020. Calculadora de tamanho de amostra. Retrieved from: (<https://pt.surveymonkey.com/mp/sample-size-calculator/>). Access in 11 jan. 2020

WALKER, M. Consumer Characteristics, Acceptance and Knowledge of, and Preferences for Kombucha. Dissertação de Mestrado, University of Maine, Orono, ME, USA, 2021.

WATAWANA, Mindani I. et al. Aspectos de saúde, bem-estar e segurança do consumo de kombucha. *Journal of Chemistry*, v. 2015, 2015.

YAMAZAKI, Sakura. Kombucha for beginners: How to brew kombucha at home. S.i, 2015.

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