



Perception and Awareness of Herbal Tea Consumption in Sweden

“An Agroecological Approach to Sustainable Herbal Tea Consumer Behaviour.”

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Abstract

This research examines the attitudes, awareness, and consumption patterns of Swedish consumers towards herbal tea, investigating the impact of health consciousness, socio-demographic factors, product availability, consumption barriers, and sustainability values within an agroecological framework. The data were gathered through an online survey among consumers in Sweden and were empirically analysed, and cluster analysis was used to identify homogeneous consumer groups. The research identified four clusters with unique orientations: health-conscious consumers, traditional experience seekers, eco-lifestyle advocates, and disengaged consumers. The clusters differed significantly in terms of health involvement, information search, and sustainability behavior, whereas socio-demographic distinctions were less pronounced.

The findings suggest that herbal tea in Sweden is primarily used as a health product, with health and lifestyle values being more influential predictors of behavior than demographic factors. Other constraints, including price and availability, limit the broader use of this approach, and although sustainability values are recognized, a gap exists between reported attitudes and actual behavior. The research provides insight into herbal tea consumption in a Nordic setting, emphasizing the role of health motivation segmentation. It also indicates that aligning health and sustainability attributes can contribute to the agroecological profile of herbal tea in Sweden.

Keywords: Herbal tea consumption, Consumer behavior, Agroecological farming, Cluster analysis, Sustainability behaviour, Health consciousness

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Abbreviations

Abbreviation	Description
PCA	Principal Component Analysis
FCQ	Food Choice Questionnaire

1. Introduction

Traditional tea is the most recognized form obtained from leaves of the *Camellia sinensis* plant and includes black, green, white, and oolong tea (Huda *et al.*, 2024). These traditional teas are well-known for their caffeine content and are utilized worldwide for their stimulating effects, antioxidant activity, and rich cultural significance (Chandrasekara and Shahidi, 2018). Tea, from the *Camellia sinensis* plant, dominates the markets of many countries and regions as one of the popular beverages. With traditional teas or other beverages, such as coffee and cocoa, naturally containing caffeine, which is not ideal for everyone, there is an increasing interest in caffeine-free options. These alternatives offer a similar flavor to traditional tea, as well as a wide range of flavors and health benefits, without the stimulating effect.

In contrast, herbal teas, commonly known as "tisane," have been consumed for centuries across various civilizations. However, this historical significance is being revitalized amid rising health consciousness, making herbal teas a key performer in the worldwide trend toward functional foods (Obón *et al.*, 2021). Herbal teas are infusions prepared from herbs, spices, flowers, fruits, roots, or any other plant substances that are not from the *Camellia sinensis* plant (Liu *et al.*, 2023). Because of their herbal origin, these herbal teas are more often caffeine-free and are mainly taken for their remedial and sensory properties rather than for the stimulation (Kinki, 2021). While traditional tea works on its own therapeutic benefits from the dried tea leaves, herbal teas are distinguished in terms of specific plant fragments used and their unique phytochemical profile (Chandrasekara and Shahidi, 2018; Poswal *et al.*, 2019). Understanding these fundamental differences with variances in mineral compositions should allow one to appreciate their increased use in global health and diet (Liu *et al.*, 2023; Olivier *et al.*, 2012).

These beverages are different from traditional teas not only by their botanical origin but also for the intention they fulfil, including natural remedies and well-being with the tenderer, and therapeutic senses (Gupta *et al.*, 2023; Liu *et al.*, 2023). Each of these herbal teas provides distinct health benefits, such as aiding digestion, relaxation, anti-inflammatory properties, and/or complementing traditional healing systems across the globe (Poswal *et al.*, 2019). Herbal teas have been consumed for centuries across various civilizations (Fu *et al.*, 2018).

Common varieties of herbal tea are peppermint, chamomile, rooibos, hibiscus, ginger, and lemon teas. Typically, herbal teas are prepared by steeping dried plant parts such as flowers, leaves, roots, or bark in hot water. Depending on the herb and the desired strength, the duration and temperature of steeping can be adjusted. This simple brewing method allows the bioactive compounds to infuse

into the water, creating a flavourful, fragrant, and medicinal beverage (Kinki, 2021).

The global herbal tea market is growing rapidly, driven by trends in health and wellness, increased awareness of natural remedies, and interest in culturally diverse beverages. According to industry reports, herbal tea consumption is expected to grow significantly in the coming decade, with Europe being one of the key markets (Grand View Research, 2023). However, regional differences in consumer attitudes, availability, and marketing strategies affect adoption rates (Euromonitor International, 2023).

1.1 Herbal Tea in the Swedish Context

Sweden occupies a prominent position on the international front as far as its firmly rooted coffee culture is concerned, being globally renowned for having one of the highest per-capita coffee consumption rates (Scander *et al.*, 2018). Although there is indeed a certain degree of tea consumption within the nation, it is far smaller in terms of volume when compared to that of coffee (Mauris and Scander, 2024). Within the context of tea, herbal tea has developed its special niche that is particular to specific consumer interests. It has been observed in recent years that there is now a detectable change in the pattern of herbal tea consumption within Sweden that increasingly reflects the broader patterns across the rest of Europe. These patterns are indicative of an increasing focus on healthy living, an interest in diversity regarding beverage options, and a dedication to sustainable consumption patterns (Mauris and Scander, 2024).

The consumer profile is particularly unique and stands out in Sweden. Consumers in Sweden are known to value their health highly, emphasize environmental sustainability, and look for open product information that enables them to make a well-informed decision (Landström *et al.*, 2007). These specific values happen to match perfectly with the prospective advantages of herbal teas, many of which are organic, as well as being sustainably sourced and promoted with a range of wellness advantages. While there is this positive match between consumer values and herbal tea characteristics, it must be mentioned that herbal teas still remain understudied in Sweden.

There are a number of possible reasons for this. Firstly, herbal tea might still be viewed as a special treat rather than a daily drink, commonly identified with recovery from illness or unwinding rather than daily use. Secondly, most of Sweden's herbal tea is imported, constraining the potential for local, agroecologically produced supplies. Thirdly, the herbal tea market has to contend with robust coffee and black tea cultures, so integration into the culture is complex. How these elements interact with health awareness, cultural heritage, product availability,

and sustainability concerns is essential to both academic and commercial understandings.

1.2 An Agroecological Perspective on Herbal Tea Consumption in Sweden

Examining the choice of consuming herbal tea through an agroecological lens reveals how personal decisions can contribute to more general sustainability objectives. Agroecology integrates ecological considerations into farming and food systems, advocating for biodiversity, locally adapted resilience, as well as circular resource use (Wezel *et al.*, 2020). In the context of herbal teas, this perspective highlights the potential for local and organic sourcing, along with traceable supply chains and accessible information, which aligns with consumer trends towards natural and ethically produced goods, while promoting the principles of consumer empowerment.

Consumers in Sweden support sustainable food systems, creating a conducive environment that promotes the use of locally grown or responsibly sourced herbal teas. Consumers in Sweden are increasingly perceiving value in organic products that are free from synthetic additives and supporting local economies alongside environmental stewardship. (Ekelund, Fernqvist and Tjärnemo, 2007). However, a large portion of herbal tea is imported from other countries, leaving regional producers with an untapped potential to cultivate herbs under agroecological management and reduce their environmental footprint. Furthermore, an agroecological approach, such as crop rotation, the use of organic fertilizer, intercropping, and the use of native plant species, promotes greater transparency and trust through supply chains and clear labels with sustainable certification. These factors may influence consumers' willingness to pay for premium or niche food products (Landström *et al.*, 2007). As interest in biodiversity, pollinator health, and regenerative practices increases, positioning herbal teas as an agroecological product category may strengthen the connection between everyday consumer behavior and sustainable food system change.

Despite the growing trend, locally grown herbal teas produced using agroecological methods remain insufficient in Sweden, and there is limited knowledge and information about whether consumers understand the impact of their tea choices on sustainable food systems. This study fills a significant gap in research on agroecology, sustainable consumption, and functional foods in Sweden. Gaining a proper understanding of how people perceive herbal teas and sustainability can reveal what's hindering local producers from succeeding and what might help them thrive. Examining tea through an agroecological lens connects

personal health with broader ecological and cultural values, which is why studying Swedish herbal tea consumption is so important. yet. Although herbal tea remains a relatively niche product, it has considerable room to grow as more people become concerned about their health and sustainable food options. As the market for local, organic herbal teas expands, this research will be beneficial for producers and policymakers seeking to meet consumer demand while adhering to sound agroecological principles.

2. Frame of References

The purpose of this chapter is to establish the theoretical and empirical foundation for the study by reviewing existing knowledge related to herbal tea consumption and consumer behavior. The research is situated within the broader academic context, identifying relevant concepts and frameworks that explain consumer attitudes and choices, and highlighting gaps in previous studies that justify the need for the present research. In the process of reviewing past research, this chapter lays the groundwork for the formulation of research questions and hypotheses that will guide the analysis.

2.1 Global Herbal Tea Consumption

Herbal tea has been consumed worldwide for many centuries, and different regions attach medicinal, cultural, and social significance to it (Fu *et al.*, 2018). For instance, in Asia, herbal teas, like Chinese chrysanthemum tea and Japanese and Korean barley tea, are used in everyday life and as a traditional practice of health, frequently perceived as being beneficial for digestion, aids for blood circulation, and overall human health (Liu *et al.*, 2023). In the Middle East and North Africa, herbal beverages approaching mint tea are inseparable from hospitality traditions and social life (Obón *et al.*, 2021). In the West, especially in North America, the consumption of herbal tea has been attributed to growing health awareness and demand for functional foods (Grand View Research, 2023). The category is gaining from the higher demand among consumers for decaffeinated options that nonetheless provide rich taste and perceived well-being benefits. Global consumers increasingly look for herbal infusions for their targeted impacts (Kong *et al.*, 2023), such as chamomile for stress reduction, echinacea for immunity enhancement, or dandelion root for detox support (McKay and Blumberg, 2006).

Recent market research illustrates that the global herbal tea market is growing steadily (Market.us, 2023; Kong *et al.*, 2023). This growth is driven by a trend toward premium products that highlight consumers' desire for high-quality, sustainably sourced, and organically certified items (Euromonitor International, 2023). Packaging innovations, such as biodegradable tea bags and minimalist, eco-friendly designs, have also helped boost sales, especially among environmentally conscious younger consumers. Further, the market scope has been improved through product diversification, such as exotic flavor blends, health or fitness-oriented formulations, and personalized tea subscription services (Liu *et al.*, 2023).

2.1.1 Herbal tea consumption in the European context

Europe remains a significant and diverse market for herbal teas, offering a wide range of consumption levels that vary substantially across its different regions. For instance, Germany can be described as the biggest single market for herbal teas in Europe. In this nation, herbal infusions are considered not just regular drinks but also as health-related remedies with positive effects, hence their popularity and acceptability among consumers, and it has been found that German consumers often purchase herbal teas for specific health benefits, such as improving digestion or supporting respiratory health, and they place a high value on organic certification (Kamiloglu *et al.*, 2012).

In the UK and France, herbal teas are gaining popularity as premium wellness offerings, with a focus on specialty blends, health claims, and origin. The European Union's strict labeling and organic certification rules have built consumer trust. Product transparency allows consumers to make informed choices (European Commission, 2021). Northern European nations like Sweden, Finland, and Denmark have a commonality for herbal teas that fit into general sustainability and health trends, whereas Southern European countries like Spain, Italy, and Greece tend to incorporate herbal infusions into cultural and traditional dietary habits (Landström *et al.*, 2007).

Ethnobotanical research that investigates the interaction between humans and plants also highlights the astounding diversity and richness of herbal tea culture that is present in different regions of Europe, systematically collecting and collating a vast amount of data from several research sites around the continent, and indicating that more than 142 different plant species are used in the making and consumption of recreational teas across Europe. This in-depth report particularly illustrates the long-standing presence of herbal teas in various local cultures across diverse regions, where the selection of plant species is frequently determined by both their ecological availability in the region and the cultural traditions that have been passed down through generations. For instance, linden, chamomile, and mint are used extensively throughout central and eastern Europe, whereas Mediterranean nations prefer species like sage, rosemary, and lemon verbena. In addition, the practice of preparing and consuming herbal teas is closely interconnected with aspects such as seasonal cycles, family traditions, and folk medicine, thus constituting a living component of Europe's intangible cultural heritage. (Sõuand *et al.*, 2013).

More recent research in Greece offers another view to explain the survey results, which show that herbal infusions and decoctions constitute a significant and in-

tegral part of developing a key element of what can be called the "Planeterranean" diet (Tomou, Peppas and Trichopoulou, 2023). This distinctive diet is a fusion of Mediterranean dietary culture, including both traditional food culture and plant-based drinks imbued with cultural meaning and presumed health-promoting qualities. The patterns of consumption for these herbal teas tend to be seasonal and closely related to traditional uses, such as curing colds, easing digestive issues, and promoting relaxation. Nonetheless, it is becoming increasingly clear that these consumption patterns are also being shaped by modern interests in sustainability and the quality of the ingredients being consumed.

Throughout Europe, studies reveal a distinct segmentation of herbal tea consumption drivers: Health-oriented consumers value the functional advantages and natural ingredients of herbal teas, and experience-driven consumers value flavour diversity, aroma, and cultural associations (Alrhoun, Sulaiman and Pieroni, 2024). Environmentally aware consumers are becoming increasingly influenced by considerations of ecologically friendly packaging (Petrenko *et al.*, 2024), product sourcing from local sources, and evidence of fair-trade labelling (MacMaoláin, 2002).

In addition, market trends suggest that there is a considerable increase in demand for locally produced herbs, along with a developing taste for shorter supply chains (Carbone *et al.*, 2025). Such a trend draws perfectly with the value system fundamental in European consumer culture, where consumers place a high degree of importance on traceability and sustainability in the products that they buy (Ekelund, Fernqvist and Tjärnemo, 2007). Sweden is especially a prime example of this, where environmental concerns have already been effectively integrated (Lidskog and Elander, 2012) into the food-buying behaviors of consumers (Dawkins *et al.*, 2023), and it logically follows that the herbal tea market would be a natural fit as an extension of the overall sustainable consumption culture that defines the country.

2.2 Health Benefits and Health Concerns of Herbal Teas

Herbal teas are widely recognized for their diverse medicinal and therapeutic applications, owing to their rich content of bioactive compounds, such as polyphenols, flavonoids, and essential oils, which work as antioxidants and possess anti-inflammatory, antimicrobial, and digestive properties (Poswal *et al.*, 2019). Common examples include peppermint, chamomile, rooibos, hibiscus, ginger, lemongrass, lavender, fennel, and lemon balm. Each has its own set of benefits, ranging from digestive relief to relaxation and anti-inflammatory properties, and has been deeply embedded in traditional medicine worldwide (McKay and

Blumberg, 2006; Poswal *et al.*, 2019). In contrast, peppermint tea is an aid for digestion, whereas chamomile helps to relax and reduce stress and has efficacy in relieving gastrointestinal disturbances (McKay and Blumberg, 2006). In the case of blood pressure reduction and cardiovascular health, hibiscus tea is favorably rich in anthocyanins and phenolic acids, aiding in anti-inflammatory, antioxidant, and anticancer effects (Malacrida *et al.*, 2022). The healing power of herbal teas has made them a popular choice in complementary and alternative medicine. A variety of studies showcase their beneficial properties, similar to the antidiabetic effects of cinnamon and ginger, the liver-protective benefits of dandelion and milk thistle, and the immune-boosting abilities of echinacea and elderberry (Sousa *et al.*, 2024).

The following table provides an overview of ten popular herbal teas and their related health benefits (Hosen and Madhu, 2023; Ravikumar, 2014). Every herbal tea contains unique bioactive components that are responsible for a range of therapeutic properties, including digestion, stress reduction, immunity, cardiovascular health, and antioxidant activity. The overview highlights their importance in both traditional and contemporary medicine (Table 1).

Table 1. Herbal teas and their health benefits

Herbal Tea	Health Benefits
Chamomile	Reduces anxiety, improves digestion, relieves stress, soothes sore throats, boosts the immune system, and fights cancer
Peppermint	Reduces anxiety, improves digestion, relieves pain from headaches, congestion relief, and reduces fevers
Ginger	Improves brain function, is a good source of antioxidants, provides congestion relief, reduces the risk of heart disease, and fights cancer.
Rooibos	Relieves stress, congestion relief, lowers blood pressure, boosts the immune system, and reduces inflammation.
Hibiscus	High source of antioxidants, reduces the risk of heart disease, and boosts the immune system.
Lemon Balm	Improves brain function, lowers bad cholesterol, balances hormones, fights infections, and fights cancer
Echinacea	Improves brain function, improves vision, relieves pain from headaches, congestion relief, and boosts the immune system
Dandelion	Relieves stress, improves digestion, provides relief from nausea, congestion, and reduces the risk of heart disease
Sage	Reduces anxiety, improves digestion, lowers blood pressure, reduces risk of heart disease, and reduces fevers
Turmeric	Improves brain function, improves digestion, lowers blood pressure, reduces risk of heart disease, and fights cancer

Source: Hosen and Madhu, 2023; Ravikumar, 2014

Despite the rising trend of herbal teas as natural remedies, safety concerns still need to be considered. Issues such as potential contamination, misidentification of plant species, and the presence of harmful compounds like pyrrolizidine alkaloids, safrole, and high levels of tannins can pose dangers (Manteiga, 1991). If

consumed in large amounts or over extended periods, certain herbal infusions could lead to liver toxicity or even cancer risks if not carefully monitored and understood (Caleja *et al.*, 2019). Pyrrolizidine alkaloids (PAs) in commercially available herbal teas have only recently been highlighted by recent studies, which have raised concerns about the risk of hepatotoxicity and carcinogenicity associated with long-term or high-dose exposure (Enge *et al.*, 2021) Without appropriate regulation and consumer awareness, even natural remedies like herbal teas may lead to adverse health outcomes (Ravikumar, 2014).

There is an open need for careful scientific testing, clear guidelines for the manufacturing of herbal teas, and enhanced education and awareness among consumers to ensure the effectiveness and safety of these products. As more individuals turn to herbal teas for health benefits, it is crucial to establish proper regulations, provide accurate labeling, and conduct in-depth research to build trust (Huda *et al.*, 2024).

2.3 Research Gap

There are a lot of studies conducted about consumer behavior in the literature, as well as beverage preferences. There are limited studies focusing specifically on herbal tea consumption. Most of these existing studies have looked into the health benefits, cultural applications, and commercial potential of herbal tea consumption; however, there is limited comprehensive academic research on how consumers view it in Sweden. Herbal tea is not regarded as a separate market in Sweden; instead, most tea research focuses on overall tea consumption or food and beverage sustainability.

Although herbal tea is increasingly available in the Swedish market, several important aspects remain underexplored in the literature. First, little is known about how consumers in Sweden perceive herbal tea in comparison to other beverages, and whether flavor, health considerations, cultural practices, or sustainability concerns primarily drive their choices. Existing studies also provide limited insight into potential barriers to adoption, such as price sensitivity, restricted availability, or lack of product knowledge. Furthermore, consumer preferences are likely to vary across sociodemographic groups, including age, gender, income, and education, yet these differences have not been systematically examined. From an agroecological perspective, herbal tea could provide a unique opportunity to link environmental sustainability with human health, for instance by reducing transport-related emissions, fostering biodiversity, and supporting small-scale organic farming. However, it is unclear to what extent consumers recognize and value these connections. Finally, understanding consumers' willingness to pay for sustainably produced and packaged herbal tea remains crucial, both for designing effective marketing strategies and for informing policy interventions.

2.4 Research Aim and Objectives

The primary objective of this study is to investigate the perception and awareness of herbal tea consumption in Sweden. Alongside this primary objective, this study aimed;

- To identify consumers' herbal tea preferences
- To explore differences in herbal tea consumption behavior among consumers
- To evaluate the health concerns of drinking on the adoption of herbal tea
- To assess consumer willingness to pay for herbal teas produced sustainably and packaged in an environmentally friendly manner
- To explore the relationship between label knowledge, product availability, and herbal tea consumption.

2.5 Research question and hypotheses

Most available literature discusses coffee, tea, and other beverages in general, or ignores herbal infusions. Similarly, herbal tea has not received the attention it deserves in the Swedish context. Omission occurs despite growing global interest in healthy drinks and the increasing demand for sustainable products.

While consumers demonstrate strong health and environmental awareness, there is a notable lack of scholarly interest in how people perceive, use, or relate to herbal teas in terms of sustainable behavior in Sweden, which is the primary motive for this study. This research aims to fill this knowledge gap by exploring consumer attitudes and behavior towards herbal tea, with a focus on environmental values and health awareness. Utilizing current behavioral models, this research investigates how individual behavior connects to ecological sustainability, well-being, and consumer socio-demographic (Carbone *et al.*, 2025). Given that the Swedish herbal tea market is a relatively unexploited yet developing industry, it is essential to identify the factors that influence or hinder its commercial success from both scholarly and applied perspectives.

What factors influence consumers' perceptions, awareness, and consumption of herbal tea, and how do health consciousness, socio-demographic characteristics, product availability, consumption barriers, and sustainability values shape these behaviours within an agroecological context in Sweden?

To operationalize this aim, the study further investigates specific behavioral and demographic variables through hypothesis testing. The following hypotheses were developed to understand consumer motivations and barriers:

- H1: There is a significant difference between consumer clusters in terms of herbal tea preferences

- H2: There is a significant difference between consumer clusters in terms of
 - H2.1. Socio-demographic characteristics (age, gender, city groups, education, and income level)
 - H2.2. Herbal tea consumption behavior
 - H2.3. Health consciousness and attitudes
 - H2.4. Sustainability and agroecological practices

These hypotheses are guided by findings from previous European and global studies, which demonstrate that health orientation, cultural familiarity, product availability, and informational transparency significantly shape herbal tea consumption (Sousa *et al.*, 2024; Gupta *et al.*, 2023; Obón *et al.*, 2021). In the Swedish context, where consumers are known to prioritize health, sustainability, and informed choices (Ekelund, Fernqvist and Tjörnemo, 2007; Landström *et al.*, 2007), such insights are especially relevant. This study thus provides a valuable starting point for deeper academic inquiry and market development around herbal tea in Sweden.

3. Methodology

3.1 Study design and Data Collection

3.1.1 Survey design

This study was designed as a cross-sectional study in Sweden and it used an online questionnaire to collect the data. The primary aim of this study is to examine the perception and awareness of herbal tea consumption in Sweden. Therefore, the questionnaire was divided into five different segments addressing each of the requirements: Herbal tea consumption, health-consciousness questions, factors influencing herbal tea consumption, Sustainability and agroecological questions, and demographic information. To address this aim, the first step was to identify consumers' preferences and choices regarding herbal tea. For this purpose, the Food Choice Questionnaire (FCQ) (Steptoe, Pollard and Wardle, 1995) was adapted and modified in line with the objectives of the research. The questions were related to herbal tea consumption in general, which is typically consumed, and were answered on a five-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (5). Additionally, herbal tea consumption behavior was assessed based on questions about herbal tea preferences (Sousa *et al.*, 2024; Suh Nchang *et al.*, 2023), herbal tea procurement channels (Carbone *et al.*, 2025), preferred type of packaging (Dharmadasa *et al.*, 2019), and awareness of labels (Kerrigan, 2020).

To capture consumers' health consciousness and attitudes, different questions based on health involvement, information channels, cooking/eating habits and shopping style were asked (Lin, Lee and Wang, 2015). As related to sustainability and agroecological practices questions, it was focused on willingness to pay for agroecologically produced herbal tea, awareness of herbal tea bags' compostable, disposable packaging, and behavior of purchasing sustainable/agroecologically produced herbal tea (Subedi, 2012). All questions were presented as multiple-choice items or measured on a five-point Likert scale.

Following the summary in the previous paragraphs, to illustrate the connection and the transparency of the survey, which sources that inspired each question or each question segment are listed below (Table 2).

Table 2. Overview of questionnaire items and the specific references used to develop the survey

Questionnaire Segment	Questionnaire Item	Reference
------------------------------	---------------------------	------------------

Herbal tea consumption	<p>To add a fundamental measurement to the survey frequency of herbal tea consumption was included</p> <p>To identify the most consumed herbal tea types and common consumer categories, the survey included preferred herbal tea types.</p> <p>Where herbal tea is purchased was included into the survey aiming to find the distribution channel.</p> <p>Influencing factors based on Packaging preference (bags vs loose-leaf) of herbal tea consumption FCQ covers factors influencing choice (taste, price, availability, environmental friendliness, organic certification, natural ingredients, etc.)</p>	<p>(Sousa <i>et al.</i>, 2024; Frackiewicz, Tarwacka and Drywien, 2023; Caleja <i>et al.</i>, 2019)</p> <p>(Long <i>et al.</i>, 2024)</p> <p>(Euromonitor International, 2023; Grand View Research, 2023; de Godoy <i>et al.</i>, 2013)</p> <p>(Dharmadasa <i>et al.</i>, 2019)</p> <p>(Ravikumar, 2014; Kong <i>et al.</i>, 2023; Sousa <i>et al.</i>, 2024; Steptoe, Pollard and Wardle, 1995; Siró <i>et al.</i>, 2008)</p>
Health-consciousness questions	<p>Health-consciousness questions aim to explore herbal tea as part of a healthy lifestyle, and consumers' interest in functional beverages examines dietary habits and sustainable buying patterns linked to a healthy lifestyle</p>	<p>(Bargiota <i>et al.</i>, 2013; Landström <i>et al.</i>, 2007; Lin, Lee and Wang, 2015; Sakthirama, 2012; Suh Nchang <i>et al.</i>, 2023; Huda <i>et al.</i>, 2024)</p>
Factors Influencing Herbal Tea Consumption	<p>Identify cost demand, supply and availability in the market and their influence for the consumption of Herbal tea.</p> <p>Discuss the lack of consumer knowledge of herbal tea and uncertainty about ingredients and doubt about health benefits</p>	<p>(Euromonitor International, 2023; Alexieva, Popova and Mihaylova, 2020; Carbone <i>et al.</i>, 2025)</p> <p>(Poswal <i>et al.</i>, 2019; Kong <i>et al.</i>, 2023; Landström <i>et al.</i>, 2007; Hosen and Madhu, 2023)</p>

Sustainability and agroecological questions	Concerns about safety/interaction with medication	(Manteiga, 1991)
	Addressing the sustainable consumption of herbal tea through willingness to pay for eco packaging.	(Vermeir and Verbeke, 2006a; Lidskog and Elander, 2012)
	Identify consumers' awareness of disposal and waste management behaviours.	(European Commission, 2021; Grunert, Hieke and Wills, 2014; Lindberg, 1993)
	Sustainable packaging trends as a minimal packaging preference	(Dharmadasa <i>et al.</i> , 2019)
	Provide foundations for agroecological principles linked to herbal tea consumption and farming practices and transparency	(Wezel <i>et al.</i> , 2020; Ekelund, Fernqvist and Tjärnemo, 2007; Grunert, Hieke and Wills, 2014)
Demographic information	Demographic variables for segmentation analysis.	(de Godoy <i>et al.</i> , 2013; Sousa <i>et al.</i> , 2024; Frackiewicz, Tarwacka and Drywien, 2023; Long <i>et al.</i> , 2024)

3.1.2 Data collection

The study population consists of herbal tea consumers living in Sweden's three largest cities: Stockholm, Gothenburg, and Malmö (SCB, 2025).

The sample size was determined by the proportional sampling method (90% for the confidence interval and 5% for the margin of error) (Newbold, Carlson and Thorne, 2013). According to the proportional sampling method, the sample size was calculated as 271. The surveys were proportionally distributed across the districts according to their respective populations.

$$n = \frac{Np(1 - p)}{(N - 1)\sigma_{px^2} + p(1 - p)} \quad (3)$$

n= Sample size

N= The population of Stockholm, Gothenburg, Malmö

σ_{px^2} = ratio variant

Data were collected using a structured online questionnaire designed through Google Forms. Initially, a targeted distribution strategy was implemented in collaboration with selected tea shops and cafés located in Stockholm, Malmö, and

Gothenburg. QR codes linking to the questionnaire were provided to these businesses, allowing customers to voluntarily participate by scanning the codes during their visits. This approach was intended to capture responses directly from active tea consumers in retail settings.

However, due to a below-expectations response rate from the participating shops, an additional sampling strategy was used. The questionnaire link was disseminated via snowball sampling, leveraging personal and professional networks and online community channels to broaden participant recruitment. Participants were encouraged to share the link further within their own networks to increase reach and diversity in the sample. The survey remained open for eight weeks and was closed at the end of May 2025. Although the calculated sample size was 271 using the proportional sampling method, a total of 200 completed questionnaires were collected. Therefore, the sample should be interpreted as a convenience sample rather than a statistically representative sample of the Swedish population.

3.2 Data Analysis

In line with the first objective of the study, consumers' herbal tea choices were estimated as employed exploratory statistical method, Principal Component Analysis (PCA) and which is widely used to obtain a large amount of data into understandable information that can be easy to use (Saporta and Keita, 2009).

The Principal Component Analysis (PCA) was used as the extraction method, and the Varimax rotation method was used to elucidate the findings. Then, the Kaiser-Meyer-Olkin Criterion ($KMO \geq 0.5$) and Bartlett's test of sphericity were used for evaluation. The determination of the number of factors was based on Eigenvalues. The internal consistency of the scale was assessed using Cronbach's alpha coefficient. It is suggested that the value of Cronbach's alpha be above 0.7 to be considered consistent (Hair *et al.*, 2014).

By the results of the PCA, after the identification of the pertinent components, we identified homogeneous groups of consumers with similar perceptions based on the herbal tea choices, using hierarchical cluster analysis based on Ward's method (Malhotra, 2010). This is a variance-minimising clustering method that uses the analysis of variance approach. It merges the two clusters with the least distance in each step, based on the total deviation squares of the observations in the formed clusters to the centre observation. Clusters are built in clustering analysis by comparing similar objects using certain distance criteria. The Euclidean distance is the most commonly used distance unit among distance measures. It directly measures the distances between i and j units in an n -variable data matrix. In Ward's method, euclidean distance is calculated using the Eq. (1) (Mazzocchi, 2010):

$$D_{ij} = \sqrt{\sum_{k=1}^n (x_{ki} - x_{kj})^2} \quad (1)$$

$i = 1, 2, 3, \dots, n$

$j = 1, 2, 3, \dots, n$

X_{ki} = the distance of variable k to observation i ,

X_{kj} = the distance of variable k to observation j .

In order to compare consumer clusters in terms of socio-demographic characteristics, herbal tea consumption behavior, health consciousness and attitudes, as well as sustainability and agroecological practices, various statistical analyses were employed. Basic descriptive statistics, including means and percentages, were used to evaluate the study data. Kolmogorov-Smirnov test was applied to determine the normal distribution of the data, analysis of variance was applied for the data which was found to be normally distributed, and Kruskal-Wallis test was applied for the data which was found not to be normally distributed. In addition, the chi-square test was conducted to compare categorical variables.

4. Results

4.1 Descriptive Statistics

This section presents the findings of the study based on survey responses from 200 herbal tea consumers in Sweden. The analysis begins with an overview of the socio-demographic characteristics of respondents and continues offering insights into herbal tea consumption behaviour.

4.1.1 Socio-demographic characteristics of respondents

The demographic profile of the 200 survey participants reveals a diverse sample (Table 3). The breakdown of the respondents by age shows a well-balanced distribution. By age, 28.5% were 30 years and below, 28% aged between 31 and 35 years, and 43.5% 36 years and above. The average age of respondents is 34.9. This indicates that the consumption of herbal tea is appealing to a wide range of age groups, with older individuals having a slight predominance. The gender breakdown was also relatively balanced, with 52.5% male and 47.5% female respondents, offering insights into the preferences and behaviors of both groups regarding herbal tea consumption.

Geographically speaking, the largest share of respondents, 50.5%, originated from Stockholm, with 28% from Malmö and 21.5% from Gothenburg. This reflects the concentration of Sweden's urban population, where consumers may be more exposed to health trends and herbal products. Respondents' level of education was high: 51.5% held a higher or master's degree, 28.5% held a bachelor's degree, and 20% had an education below a bachelor's degree. This reflects an extremely highly educated sample, as suggested by the literature, which identifies education as a factor related to sustainable consumption and health consciousness.

Income distribution was also broadly spread. The highest frequency income level was 25,000–35,000 SEK per month (23.5%), followed by 21.5% for the range 15,000–25,000 SEK. Approximately 36.5% of the interviewees had over 35,000 SEK per month, and 18.5% had below 15,000 SEK. The income spread of this type illustrates that there is not only demand for herbal tea among middle- to high-income shoppers but among all economic strata. Collectively, the socio-demographic makeup of the sample provides a solid foundation for examining Swedish consumer patterns of awareness and behavior regarding herbal tea.

Table 3. Socio-demographic characteristics of respondents

Demographic Variables	Description	Percentage (%)
	≤ 30	28.5

Age	31 - 35	28.0
	36 <	43.5
Gender	Male	52.5
	Female	47.5
City Group	Stockholm	50.5
	Gothenburg	21.5
	Malmö	28.0
Education	<Bachelor's degree	20.0
	Bachelor's degree	28.5
	≥Master's or higher-level education	51.5
Monthly income level	≤ 15000 SEK	18.5
	15,000 - 25,000 SEK	21.5
	25,000 - 35,000 SEK	23.5
	35,000 - 50,000 SEK	18.5
	> 50,000 SEK	18.0

4.1.2 Herbal tea consumption behaviour

This section analyses consumers' herbal tea consumption behaviour by examining key dimensions such as preferences, purchasing habits, packaging choices, and perceived barriers to consumption. Table 4 summarises the empirical findings and provides an overview of these behavioural patterns. The findings show that herbal tea consumption is generally occasional rather than a daily habit among respondents. Most participants (31.5%) reported drinking herbal tea a few times per week, indicating a moderate level of consumption. At the same time, a considerable share of respondents consume it less frequently, with 25.5% reporting rare consumption and another 25.5% drinking it only a few times per month. Daily consumption remains relatively limited (17.5%). These results suggest that herbal tea is not yet a daily beverage for most consumers; however, it is incorporated into the routines of many at least every week. The mean consumption frequency score is 2.41 on a scale where higher values indicate more frequent intake. This average reflects a moderate level of engagement with herbal tea among consumers. These findings indicate that herbal tea consumption is not yet part of a daily routine for most consumers, suggesting a moderate level of integration into everyday consumption patterns. Herbal tea preferences, with 53% voting for mint. Chamomile followed at 33%, with rooibos coming in third (23.5%), and lemon verbena (20.5%). The more exotic or unfamiliar varieties, like linden and hibiscus, had much lower audiences of 2.5% and 1.5%, respectively, testifying to their limited mainstream appeal. Notably, 16.5% voted "other", hinting at a diversity of more personal or culturally influenced preferences that were not considered in the set options.

In terms of retail, herbal tea is by far most commonly purchased from supermarkets, with 76% of customers selecting this option. While supermarkets appear to be the dominant purchasing channel, this may reflect convenience rather than product diversity or specialization. Specialty tea shops (21%), online stores (10.5%), and pharmacies (9.5%) were chosen less frequently, indicating a certain degree of market presence. The low percentages observed for farmers' markets (5%) and "other" options (9%) indicate that alternative or local purchasing methods are still largely ignored in the market.

Commonly used packaging was standard tea bags (70.5%), followed by loose leaf tea (36.5%). Pyramid tea bags (24.5%) are positioned into a niche market segment. Less popular environmentally motivated bags, such as compostable (10%) and individually wrapped bags (10%), suggest that some consumers are motivated by sustainability. However, convenience and ease of use take priority. The study reveals that a significant number of respondents actively seek product information before purchasing herbal tea (Table 4). The analysis shows that 39.5% of respondents "always" read the label, while another 23.0% read it "often". Additionally, 23.5% of respondents checked labels "sometimes", whereas only 10.0% and 4.0% indicated that they "rarely" or "never" checked labels, respectively. This data suggests that a majority of consumers in Sweden (62.5%) prefer to review labels regularly before buying herbal tea. This behavior indicates a concern for product quality, ingredient transparency, and sustainability certifications.

Table 4. Descriptive statistics of herbal tea consumption behavior

Description	Frequency	Percentage (%)	
Frequency of herbal tea consumption	Rarely	51	25.5
	A few times a month	51	25.5
	A few times a week	63	31.5
	Daily	35	17.5
Preferred herbal tea type	Mint	106	53.0
	Chamomile	66	33.0
	Rooibos	47	23.5
	Lemon Verbena	41	20.5
	Linden	5	2.5
	Hibiscus	3	1.5
	Other(s)	33	16.5
Channels of herbal tea procurement*	Supermarket	152	76.00
	Specialty tea shops	42	21.00
	Online	21	10.50
	Pharmacies	19	9.50
	Farmers' market	10	5.00
	Other(s)	18	9.00

Preferred type of Packaging*	Tea bags (single-use sachets)	141	70.5
	Loose-leaf	73	36.5
	Pyramid tea bags	49	24.5
	Individually wrapped bags	20	10.0
	Compostable bag	20	10.0
	Other(s)	3	1.5
Reading product labels before purchasing herbal tea	Never	8	4.0
	Rarely	20	10.0
	Sometimes	47	23.5
	Often	46	23.0
	Always	79	39.5

**The following questions allowed multiple responses; therefore, total percentages exceed 100%*

4.1.3 The factors of herbal tea consumption decisions

The descriptive statistics of consumer perceptions (Table 5) regarding the various factors of herbal tea indicate that the sensory attributes of the drink were considered the most highly regarded by consumers. To be specific, the statement "Tastes good" had the majority of respondents express positive agreement, with 66 participants selecting agree and 83 participants selecting strongly agree, together representing 149 of the 200, with a high mean score of 3.96, and "Smells nice" followed closely with a mean score of 3.90. These high mean scores indicate a strong consumer preference for flavor and aroma, which are the primary drivers of herbal tea consumption.

Health-related values also came out as significant dimensions. Participants agreed that herbal tea "Helps me deal with stress/relax" ($M = 3.76$) and "Keeps me healthy" ($M = 3.74$), indicating a clear perception of herbal tea's functional values for health. The remaining health values perceived, such as being "Good for skin/teeth/hair" ($M = 3.42$) and "Contains vitamins and minerals" ($M = 3.32$), were moderately agreed on.

The convenience and availability attributes were also rated positively. Consumers perceived herbal tea as "Easy to prepare" ($M = 3.73$) and "Available in retail outlets and supermarkets" ($M = 3.52$). Perceptions about price were less consistent, with "Not expensive" having a mean score of 3.29, suggesting polarized views on affordability. The sustainability and environmental features were discovered to fall under the mid-range category. Particular attributes, including "Environmentally friendly packaging" (with a mean score of 3.28), "Look for organic certification" (with a mean score of 3.23), and "Look for eco-friendly products when shopping" (with a mean score of 3.32), reflect a modest degree of concern among consumers. Nevertheless, these attributes were not found to be a determining factor for most consumers in their purchasing decisions.

In direct contrast with the other categories, cultural associations garnered the lowest scores in this evaluation. The statement "Is like the tea I drank when I was a child" (M = 2.81) reflected a relatively low level of agreement among respondents, indicating that herbal tea in Sweden lacks association with traditional habits or nostalgic consumption patterns derived from childhood experiences. Similarly, the statement "I consider herbal tea as a part of my culture" (Mean = 3.21) reflected only a moderate degree of agreement, highlighting that there is no entrenched view of herbal tea as a fundamental element of cultural identity among the respondents.

In general, these results suggest that sensory appeal and perceived health benefits are the main drivers of herbal tea consumption in Sweden, while cultural tradition and environmental sustainability concerns have a secondary and weaker influence on consumers' attitudes and choices regarding herbal tea.

Table 5. Consumer perceptions of herbal tea choices (%)

Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean*
Contains a lot of vitamins and minerals	11.500	10.0	27.50	37.00	14.0	3.32
Keeps me healthy	11.5	6.0	9.0	44.5	29.0	3.74
Is good for my skin/teeth/hair/nails, etc	11.0	12.5	19.0	39.0	18.5	3.41
Helps me cope with stress/ Helps me relax	8.5	4.5	18.5	39.5	29.0	3.76
Helps me cope with life	10.5	9.0	26.5	33.5	20.5	3.44
Cheers me up/ Makes me feel good	8.5	7.5	18.5	42.5	23.0	3.64
It is easy to prepare	7.0	8.5	19.0	36.0	29.5	3.72
It is easily available in shops and supermarkets	8.5	12.5	20.5	36.0	22.5	3.51
Smells nice	7.5	5.0	12.5	40.0	35.0	3.90
Tastes good	8.5	3.0	14.0	33.0	41.5	3.96
Contains no artificial ingredients	9.5	8.0	20.5	30.0	32.0	3.67
Is not expensive	9.5	21.0	28.0	28.0	13.5	3.29
Helps me control my weight	16.0	15.0	23.0	32.0	14.0	3.13
This is what I usually drink	9.5	21.0	28.0	28.0	13.5	3.15
Is like the tea I drank when I was a child	18.5	26.0	21.0	25.5	9.0	2.80
Packaging looks nice	11.5	18.5	25.5	33.0	11.5	3.14

Is the package environmentally friendly way	11.0	14.0	26.0	34.5	14.5	3.27
I look for environmentally friendly products when shopping	9.5	13.5	30.0	30.0	17.0	3.31
I look for organic certification	11.5	14.5	29.0	29.5	15.5	3.23
I consider herbal tea as a part of my culture	13.5	19.0	20.0	27.5	20.0	3.21

*1:strongly disagree, 5: strongly agree

Several significant barriers to consuming herbal tea were highlighted (Table 6). Limited availability (39.5%) and high price (38%) emerged as the two most significant barriers, indicating that cost and accessibility continue to be the primary hurdles to greater market visibility. Additionally, a preference for other beverages (36.5%), such as coffee and traditional tea, in addition to herbal tea, continues to compete for market share. Lack of knowledge or uncertainty about the ingredients or quality (17.5%) suggests a lack of education and trust among consumers. Only 7.5% suspected herbal tea is not healthy, and only 3% were worried about interactions with their medicine. These findings indicate that structural factors such as price and perceived availability remain key constraints. However, the notion of limited availability may reflect perceived limitations in product variety or accessibility rather than actual absence in retail channels. Table 6. Main barriers to the consumption of herbal tea*

	Frequency	Percentage (%)
Lack of availability in stores	79	39.50
High price	76	38.00
Preference for other beverages (e.g., coffee, black tea, soft drinks)	73	36.50
Limited knowledge of herbal teas (e.g., types, preparation, usage)	55	27.50
Uncertainty about ingredients/ quality	35	17.50
Don't believe herbal teas provide noticeable health benefits	15	7.50
Potential interactions with medications	6	3.00
Other(s)	7	3.50

*The following questions allowed multiple responses; therefore, total percentages exceed 100%

4.1.4 Health consciousness and attitudes

The findings regarding health involvement and information-seeking behaviors (Table 7) show that the survey respondents have, on average, a moderate to strong tendency towards health-oriented behaviors. In particular, the item "Maintaining good health is a priority in my daily life" had the highest mean score, with a 3.80. A desirable majority of the participants, consisting of 92 respondents who marked 'Agree' and another 46 who marked 'Strongly Agree', clearly implies that having good health is a very important priority for most respondents. Similarly, the items "I read product labels to assess health-related details" and "I take careful consideration of health factors when selecting food or drinks" also received strong support from the respondents. This also implies that health-related cues at the product level have a vital and determining influence on consumer choices. Additionally, a substantial number of respondents expressed a strong interest in learning about health knowledge. For example, "I actively seek out information related to health and wellness" with a 3.57 mean, and "I often seek out health-related information (e.g., online articles, books, research)" both reflect ongoing engagement. Respondents also talk about health with others, as evidenced by "I often discuss health topics with others", reflecting the social nature of health consciousness.

Conversely, some behaviors ranked relatively lower. The use of mobiles or mobile apps for monitoring health (M = 3.03) and consulting specialists prior to using new health products (M = 2.98) showed the lowest means, reflecting that although general health awareness is strong, the use of digital health-monitoring tools and consultation with professionals is relatively low. Interpreting the results as a whole demonstrates that the respondents in this research place great value on health as an indispensable part of their general lifestyle. This prioritization of health is especially strong when they are confronted with everyday choices that involve their decisions in terms of food and drink intake, as well as the effort they exert in remaining informed through various media sources. It is notable that some proactive approaches toward optimizing health, such as electronic monitoring of health indicators or professional consultation to garner advice, are less likely to be taken up by the respondents compared to other behaviors.

Table 7. Health involvement and information-seeking behaviors (%)

Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean*
The best statement reflects health involvement.						
I regularly monitor my health status (e.g., weight, blood pressure, check-ups)	8.00	14.00	25.50	39.50	13.00	3.35

I actively seek out information related to health and wellness.	6.5	9.0	21.0	48.0	15.5	3.57
I carefully consider health aspects when choosing food or beverages.	7.5	4.5	20.5	47.0	20.5	3.68
I read product labels to evaluate health-related information.	4.50	7.00	21.00	46.00	21.50	3.73
I frequently talk about health topics with others.	6.5	10.5	35.0	32.0	16.0	3.40
I follow a specific health-related routine or diet.	8.00	15.00	32.50	30.50	14.00	3.27
I often use mobile apps or devices to track my health.	13.00	20.00	32.00	21.50	13.50	3.02
I base my purchasing decisions on the health benefits of the product.	5.50	11.00	29.50	39.50	14.50	3.46
I consult professionals before using new health products.	14.50	19.50	31.00	24.00	11.00	2.97
Maintaining good health is a priority in my daily life.	4.00	4.50	22.50	46.00	23.00	3.79
Read about health in newspapers, magazines, books, TV, Radio, social media, etc						
I frequently seek out health-related information (e.g., online articles, books, research).	6.00	10.00	31.00	43.00	10.00	3.41
I follow health news and trends to stay informed.	8.50	13.00	33.00	33.50	12.00	3.27
I consult health professionals or credible sources when I have health concerns.	9.50	11.50	26.00	39.00	14.00	3.36
I regularly read or watch content about health in newspapers, magazines, books, TV, radio, or social media.	10.00	12.50	29.00	35.50	13.00	3.29

*1: strongly disagree, 5: strongly agree

The descriptive findings (Table 8) indicate clear patterns in respondents' cooking and eating habits. Almost half of the respondents (49.0%) mentioned that they typically make homemade meals from scratch with fresh ingredients, and another 40.0% mentioned that they make meals by mixing fresh ingredients with packaged or jarred sauces. Conversely, a lower percentage (6.5%) mentioned that they quite often use heating ready-made meals (e.g., pizza, lasagne, frozen meals), and merely 2.5% mentioned that they typically eat out. These findings suggest that the majority of respondents have firm cooking involvement, with a definite orientation towards fresh and homemade meal preparation.

The frequency of shopping at health food stores has a high degree of variation. A large number of respondents indicated that they had little or infrequent contact with the stores, as indicated by 20.5% never having shopped there and 39.0% shopping there only once a month or less. Moderate levels of activity were seen among those who visited the stores 2–4 times a month (18.5%) or once a week (11.5%). Only a small minority (10.5%) reported frequent shopping (2–3 times per week or more) at health food stores. These findings suggest that, although the majority of respondents consider the use of fresh produce a central feature of their eating practices, routine shopping at specialty health food stores is limited, implying that traditional grocery retailers are the primary source for such products.

Table 8. Cooking habits and shopping frequency in health food stores (%)

Description	Frequency	Percent
The best statements describe your eating and/or cooking habits most of the time		
Don't know	4	2.00
I have normally eaten	5	2.50
I usually heat ready meals in the oven/microwave oven (i.e., pizza, lasagne, frozen fish, chicken, and veg)	13	6.50
I have normally been eating/cooking meals using a combination of fresh ingredients and packets/jars of ingredients/sauces	80	40.00
I have normally been eating/cooking homemade meals from scratch using fresh ingredients	98	49.00
How often do you shop in health food shops?		
Never	41	20.50
Once a month or less	78	39.00
2-4 times a month	37	18.00
Once a week	23	11.50
2-3 times a week	14	7.00
4 or more times a week	7	3.00

4.1.5 Awareness and attitudes of sustainability and agroecological practices

Consumers' awareness and attitudes toward sustainability and agroecological practices were assessed (Table 9) using a set of items designed to capture their knowledge, perceptions, and behaviors regarding herbal tea consumption. First, the willingness to pay for herbal tea produced using agroecological methods and sustainable packaging were asked (Table 9). The findings suggest that consumers exhibit a limited willingness to pay even modest price premiums, indicating that, despite the value attributed to sustainability, price sensitivity remains a key constraint. When asked about herbal tea developed by agroecological agricultural practices, the highest number of respondents (24.0%) expressed readiness to pay an additional 1–5%, followed by 21.0% who were willing to pay 11–20% more, and 20.5% expressing willingness to pay an extra 6–10%. Only 10.5% said they would not be willing to pay any premium. Interestingly, an equivalent 10.5% expressed a willingness to pay more than 30%, suggesting the presence of a smaller but highly motivated consumer group committed to agroecological production practices. A comparable pattern emerged in relation to sustainable or eco-friendly packaging. Approximately 23.0% of participants expressed a willingness to incur an additional cost of 1–5%, whereas 22.5% indicated a readiness to pay 6–10% more. Additionally, 17.0% and 16.5% were willing to spend 11–20% and 21–30% more, respectively.

Conversely, a smaller segment (12.5%) reported that they would not pay a premium for environmentally friendly packaging. Taken together, these results show that although most respondents are willing to pay a small to medium-sized premium (1–20%) for agroecological and environmentally friendly characteristics, high willingness (>30%) is expressed by only a relatively limited segment. This implies that consumers appreciate sustainable packaging and production, but might work best as value-added differentiators instead of premium price drivers in the Swedish market.

Table 9. Willingness to pay for herbal tea produced using agroecological methods and sustainable packaging (%)

Description	Frequency	Percent (%)
Herbal tea that is produced using agroecological farming methods		
0% (I would not be willing to pay extra)	21	10.50
1–5%	48	24.00
6–10%	41	20.50
11–20%	42	21.00
21–30%	27	13.50
More than 30%	21	10.50
Herbal tea comes in sustainable or environmentally friendly packaging		

0% (I would not be willing to pay extra)	25	12.50
1–5%	46	23.00
6–10%	45	22.50
11–20%	34	17.00
21–30%	33	16.50
More than 30%	17	8.50

To capture awareness and sustainable practices in herbal tea consumption, different questions were asked regarding disposable habits.

The results reflect the existence of a diverse and mixed awareness, along with varying sustainable behaviors, among consumers regarding the compostability of herbal tea bags. There is also considerable concern about the disposal procedures for packaging related to these products (Table 10).

Regarding knowledge about compostable or biodegradable tea bags, the most significant group of respondents, representing 37.5%, indicated that they had this knowledge and actively chose to go for compostable tea bags when they went shopping. However, a significant 34.5% of participants stated that even though they had such knowledge, they did not use it when they were making their purchases, reflecting a considerable gap between what they know and what they actually do in the market. Another 20.5% admitted to being unsure whether their tea bags were compostable, while a small fraction (5.0%) solely drank loose-leaf herbal tea. Only 2.5% expressed total uncertainty about the issue. This pattern reflects the commonly observed gap between awareness and actual behavior in sustainable consumption.

In terms of disposal habits, a high percentage of consumers (45.5%) stated that they practice recycling of packaging materials such as paper, cardboard, or plastic. However, a considerable percentage (28.0%) stated that they dispose of both tea bags and packaging with regular rubbish, indicating the major barrier to achieving sustainable results. Only 14.0% composted tea bags, and just 8.0% composted tea bags and packaging. Another 4.5% admitted uncertainty regarding disposal procedures. The results indicate that, while there is a relatively high awareness of sustainability characteristics, there is a significant gap regarding sustainable disposal practices. Many consumers prefer recycling of packaging materials compared to composting tea bags, possibly because of a lack of infrastructure or clear instructions. This reveals the essential requirement for consumer education, clear labeling, and easily accessible disposal options to help align awareness with sustainable behaviors.

Table 10. Awareness of the compostability of herbal tea bags and disposal practices for herbal tea packaging

Description	Frequency	Percent (%)
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Awareness of whether the herbal tea bags you consume are compostable or biodegradable		
I am not sure.	5	2.50
I don't use tea bags / I only consume loose-leaf herbal tea.	10	5.00
No, I am not aware.	41	20.50
Yes, I am aware, but I ignore that when purchasing.	69	34.50
Yes, I am aware, and I choose compostable tea bags.	75	37.50
Disposable method of herbal tea packaging and tea bags		
I am not sure how to dispose of them	9	4.50
I throw both the tea bag and the packaging into the general waste	56	28.00
I compost both the tea bag and the packaging	16	8.00
I compost the tea bag	28	14.00
I recycle the packaging (e.g., paper, cardboard, plastic)	91	45.50

The results show that consumers in Sweden generally have positive attitudes towards agroecological and sustainable farming practices, but the level of agreement varies according to specific aspects (Table 11). The most support was registered for sustainable packaging and biodiversity promotion. More than two-thirds of the respondents agreed or strongly agreed with supporting farms that protect local biodiversity (52.5%) and preferring brands with little or low-impact packaging (54.5%). The average scores (3.53 and 3.53, respectively) indicate a steady inclination towards sustainability values. Similarly, valuing herbal tea products made using agroecological farming practices received notable support, with 53.5% agreeing or strongly agreeing and a mean of 3.49, highlighting that agroecological production is an appealing attribute for many consumers.

For soil health, attitudes were moderately positive. Although 42.5% of the respondents agreed or strongly agreed with favoring farms that enhance soil health, 52.5% disagreed or were neutral, with a lower mean of 3.30. This implies that although consumers might theoretically appreciate soil health, it is less immediately grasped or prioritized than overt sustainability indicators such as packaging or biodiversity. The lowest agreement was recorded on the active seeking of information about farming methods (Mean = 3.15). Though 38.5% agreed or strongly agreed, nearly half of the respondents (52.5%) were neutral or disagreed, indicating a limited consumer compulsion to verify farm methods actively. This suggests reliance on labeling, certification, or brand communication rather than active search.

In general, the results indicate that consumers are open to agroecological values such as biodiversity and environmentally friendly packaging, but that a gap exists in knowledge and active interaction with agricultural practices. Enhancing

information availability, certification, and communication strategies may close this gap and make consumer choices congruent with agroecological principles.

Table 11. Attitudes toward agroecological farming and sustainable practices in herbal tea consumption (%)

Description	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean*
I prefer farms that focus on improving soil health.	5.00	15.00	37.50	30.00	12.50	3.30
I value herbal tea products made using agroecological farming practices.	5.00	10.50	31.00	38.00	15.50	3.48
I support farms that promote and maintain local biodiversity.	5.50	8.00	34.00	33.00	19.50	3.53
I prefer herbal tea brands that use minimal** or low-impact packaging.	6.00	7.50	32.00	37.00	17.50	3.52
I actively look for information about the farming practices used to produce my herbal tea.	9.00	16.50	36.00	27.50	11.00	3.15

*1:strongly disagree, 5: strongly agree

**Minimal packaging refers to packaging that uses fewer materials and generates less waste

4.2 Hypothesis Testing Results

4.2.1 Herbal tea choices

The Principal Component Analysis (PCA) was used to determine the number of underlying latent factors that influence consumers' perceptions and motivations for using herbal tea and to examine the structure of relationships between those factors and observed variables. For the PCA results, 18 items were grouped into four distinct factors representing different psychological, practical, cultural, and sustainability-related motivations for using herbal tea. Factor loadings, item means, and standard deviations are presented in Table 12.

Factor 1 reflects consumers' perceptions of herbal tea as a means to promote health and well-being. It consists of assertions relating to physical health, relief of stress, and a general therapeutic nature, such as "Keeps me healthy," "Contains lots of vitamins and minerals," and "Cheers me up/Makes me feel good." All the significant items in this factor are health-related in their orientation, and

the factor is thus labelled as Health and Wellness Orientation. Factor 2, named and labelled as Practical and Sensory Appeal, is products that have to do with the sensory and convenience aspects of consumption of herbal tea. These are sensory features like taste and smell, and practical features like price, preparation ease, and availability in the marketplace. These indicators identify the more functional, experiential aspects of product experience that affect consumer choice. Factor 3 reflects consumers' ethical and environmental consciousness toward their purchasing decisions.

Items such as "I look for environmentally friendly products when shopping" and "I look for organic certification" are included in this factor. Since all these statements relate to sustainability preferences and consumer ethics, this factor is named Environmental and Ethical Values. Factor 4 is consumers' emotional connection and habit-based association with herbal tea. This category of products shows experience and habitual consumption, such as "It's like the tea I had when I was young" and "It's what I drink normally." These products reflect the habit-based and nostalgic direction of tea consumption behavior, and thus, the factor is labelled Habitual and Cultural Attachment.

For internal reliability, the Cronbach's alpha coefficients for the four factors are 0.911, 0.898, 0.884, and 0.747, respectively, all of which are considerably higher than the generally accepted threshold of 0.6 for exploratory research (Hair et al., 2014) These values indicate a satisfactory internal consistency of each factor and confirm that the factor solution extracts reliable measurement constructs. The PCA findings provide a strong foundation for subsequent segmentation and behavioral analysis with cluster analysis.

Table 12. Results of PCA and descriptives

	Factor Loading	Mean*	SD
Factor 1: Health and wellness orientations (Cα= 0.911), Average mean 3.46			
Keeps me healthy	.834	3.74	1.26204
It's good for my skin/teeth/hair/nails, etc	.796	3.42	1.23710
Contains a lot of vitamins and minerals	.790	3.32	1.18092
Helps me cope with life	.666	3.45	1.21423
I consider herbal tea as a part of my culture	.620	3.22	1.32952
Cheers me up/ Makes me feel good	.595	3.64	1.16498
Factor 2: Practical and Sensory Appeal (Cα= 0.898), Average mean 3.67			
Tastes good	.825	3.96	1.20234
Smells nice	.808	3.90	1.16049
It is easily available in shops and super-markets	.689	3.51	1.21124

Is not expensive	.682	3.29	1.26249
Contains no artificial ingredients	.645	3.67	1.26455
It is easy to prepare	.642	3.72	1.17742
Factor 3: Environmental and Ethical Values (Cα= 0.884), Average mean 3.23			
I look for environmentally friendly products when shopping	.781	3.31	1.18439
Is the package environmentally friendly way	.771	3.27	1.19856
I look for organic certification	.698	3.23	1.21428
Packaging looks nice	.646	3.14	1.19209
Factor 4: Habitual Attachment (Cα= 0.747), Average mean 2.97			
It's like the tea I drank when I was a child	.823	2.80	1.25893
This is what I usually drink	.720	3.15	1.18088

*1: Strongly disagree, 5: Strongly agree. SD = standard deviation, C α =Cronbach's alpha

The factor loading plot (Figure 1) illustrates how consumer perceptions of herbal tea attributes are grouped into four distinct underlying factors.

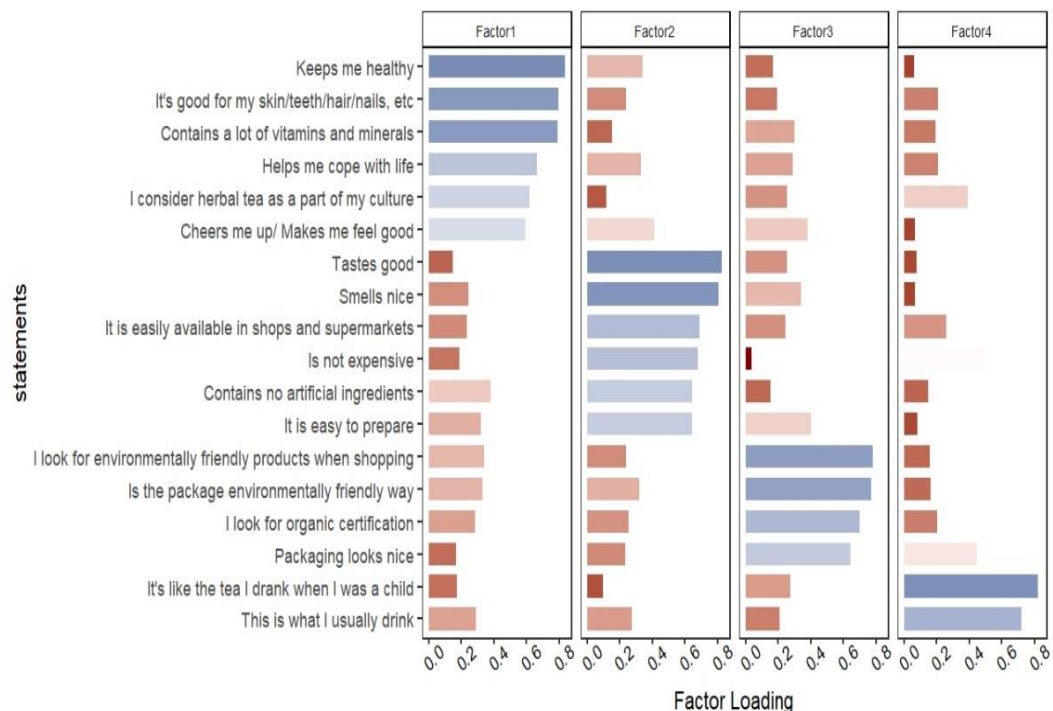


Figure 1. Factor loadings of consumer perceptions of herbal tea attributes

The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test (Table 13) results verified the adequacy of the dataset for factor analysis. The KMO value of 0.919 showed solid sampling adequacy, which meant that the correlations between items were sufficiently strong to detect unique patterns of consumer behavior. The statistical significance of Bartlett's Test of Sphericity ($\chi^2 = 2701.755$, Degrees of freedom used in the chi-square test = 153, $p < .001$) confirmed that there was no identity

matrix in the correlation matrix and that significant factor extraction could be achieved. These findings show a firm statistical justification for conducting Principal Component Analysis (PCA).

Table 13. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.919
Bartlett's Test of Sphericity	Approx. Chi-Square	2701.755
	Degrees of freedom	153
	Sig.*	<.001

*Significant level $p < 0.05$

Based on the Ward Method cluster analysis (Table 14), the respondents were divided into four clusters based on the regression scores given for each of the four factors from factor analysis: Health and Wellness Orientation, Practical and Sensory Appeal, Environmental and Ethical Values, and Habitual and Cultural Attachment. Each cluster is determined distinctly by a different consumption profile. The first cluster, which represents 37% of the sample ($n = 74$), can be described as traditional experience seekers. The group is characterized by moderately positive scores in Practical and Sensory Appeal (0.35) and environmental and ethical values (0.40), with relatively high values for habitual and cultural attachment (0.71). Such consumers may consider herbal tea an accessible product dictated by familiarity and cultural ties, with great importance placed on practicality and sensory appeal. They moderately consider health, which gives equally moderate motives for consumption.

The second cluster, making up 34.5% of respondents ($n = 69$), aligns with health-conscious consumers. People attaching lots of importance to health and wellness orientation (at 0.77) constitute this segment; hence, their herbal tea consumption is dominated by health motivation. Although environmental concern and cultural attachment are low (-0.70 and -0.26 , respectively), they score provisionally high on practical and sensory Appeal (0.20), suggesting a practical perception of herbal tea as a product.

In contrast, the third cluster, which comprises just 13% of the sample ($n = 26$), can be identified as disengaged or low-involvement consumers. All four dimensions show low mean values in this small cluster, with practical and sensory appeal (-1.71) and health orientation (-1.08) showing the lowest mean values. These respondents are probably the least interested in herbal tea in general; they may drink it occasionally or show little curiosity about its cultural or health benefits.

Finally, 15.5% of the participants ($n = 31$) form a distinct cluster that may be best described as eco-lifestyle advocates. This group scores lower on the other

dimensions but very highly on environmental and ethical values (1.07). These customers' consumption of herbal tea is consistent with more general ecological lifestyle values, and they are probably influenced by sustainability, packaging, and certifications (such as organic and eco-friendly).

Table 14. Cluster analyses based on consumer motivations toward herbal tea consumption

Factor	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Health and Wellness Orientation	-0.16134	0.77141	-1.07979	-0.42626
Practical and Sensory Appeal	0.35000	0.19967	-1.71354	0.15726
Environmental and Ethical Values	0.40172	-0.70218	-0.55365	1.06834
Habitual and Cultural Attachment	0.71396	-0.26343	-0.00117	-1.11696
Frequency	74	69	26	31
Percent (%)	37	34.5	13	15.5

*Regression scores across four motivational dimensions and distribution of respondents in each cluster (n = 200)

The cluster plot (Figure 2) visually illustrates the distribution of respondents into four distinct clusters based on their factor scores derived from Principal Component Analysis (PCA). Each cluster is represented by a different shape and colour, with boundaries outlining the spatial grouping of individuals; red circles - traditional experience seekers, green triangles - health-conscious consumers, yellow squares - low-involvement or disengaged consumers, and blue crosses - eco-lifestyle advocates. Although some overlap exists among the clusters, the overall separation demonstrates significant segmentation, confirming that herbal tea consumers in Sweden can be clustered according to distinct motivations such as health, culture, practicality, and ecological values.

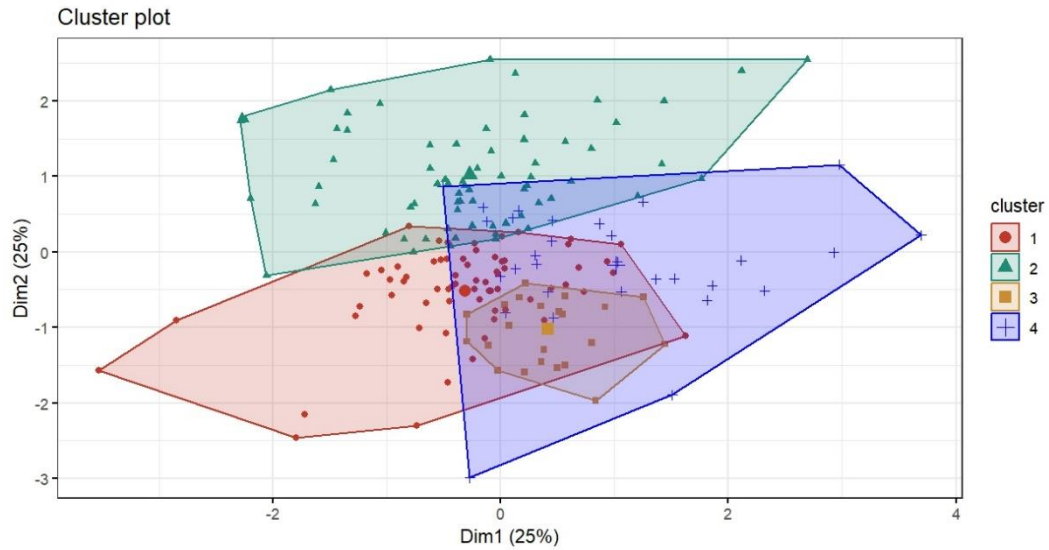


Figure 2. Cluster plot based on factor scores

4.2.2 Consumer cluster differences

The comparison between clusters and socio-demographic characteristics was analysed through the Chi-square tests (Table 15), which indicated no statistically significant relations between consumer clusters and socio-demographic variables like age, city, gender, education, and income. Descriptive tendencies were present, however. For instance, younger respondents (≤ 30 years) were more frequently traditional experience seekers, while older respondents (≥ 36 years) were more likely to be eco-lifestyle advocates. Gender differences were also evident, with women more frequently categorized as traditional experience seekers, while men tended more towards eco-lifestyle advocates. Higher income brackets had a slight tendency towards eco-lifestyle advocates, while the 35,000–50,000 SEK bracket was more frequently health-conscious consumers. Though not significant, these trends are helpful indications of how socio-demographic traits may map onto consumer clusters.

Table 15. Association between consumer clusters and socio-demographic characteristics (%)

	Traditional experience seekers (%)	Health-conscious consumers (%)	Low-involvement consumers (%)	Eco-lifestyle advocates (%)	P-Value
Age groups					
≥ 30	47.4	31.6	14.0	7.0	0.160
31 - 35	35.7	39.3	12.5	12.5	
36<	31.0	33.3	12.6	23.0	

City groups					
Stockholm	35.6	37.6	12.9	13.9	
Gothenburg	39.5	30.2	14.0	16.3	0.979
Malmö	37.5	32.1	12.5	17.9	
Gender					
Male	28.4	36.8	14.7	20.0	0.083
Female	44.8	32.4	11.4	11.4	
Education					
<Bachelor's degree	42.5	27.5	17.5	12.5	
Bachelor's degree	33.3	31.6	14.0	21.1	0.608
≥Master's or higher-level education	36.9	38.8	10.7	13.6	
Income					
≤ 15000 SEK	27.	37.8	16.2	18.9	
15,000 - 25,000 SEK	39.5	34.9	11.6	14.0	
25,000 - 35,000 SEK	46.8	21.3	12.8	19.1	0.340
35,000 - 50,000 SEK	40.5	45.9	10.8	2.7	
> 50,000 SEK	27.8	36.1	13.9	22.2	

The findings (Table 16) reveal that there are significant differences in the frequency of herbal tea consumption across the four consumer clusters identified, with a p-value of 0.05. Daily herbal tea consumption was most frequent among traditional experience seekers (60.0%), whereas health-conscious consumers had the highest share of weekly consumption (49.2%). Low-involvement consumers and eco-lifestyle advocates had lower shares on the daily and weekly scales but greater representation on the "rarely" and "a few times a month" scales. This implies that health-focused clusters exhibit a higher frequency of herbal tea consumption compared to low-involvement and eco-oriented consumers in Sweden.

Table 16. Frequency of herbal tea consumption across consumer clusters (%)

Frequency of herbal tea consumption	Traditional experience seekers	Health-conscious consumers	Disengaged Consumers	Eco-lifestyle advocates	P-Value
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Rarely	39.2	21.6	17.6	21.6	
A few times a month	25.5	39.2	15.7	19.6	
A few times a week	31.7	49.2	6.3	12.7	0.05*
Daily	60.0	20.0	14.3	5.7	

* $p < .05$ (two-tailed). Asterisks (*) denote statistically significant Chi-square test results.

The findings (Table 17) reveal that there are significant differences between consumer clusters in involvement in health and information-seeking behaviors. Traditional experience seekers and health-conscious consumers are consistently the most involved in various aspects of their lives, such as reading product labels, making health a priority in everyday life, and keeping up with health news. Eco-lifestyle advocates also exhibit comparatively high awareness, especially in appreciating product health features and environmental sustainability. Conversely, low involvement consumers have consistently lower mean scores, reflecting less concern for health monitoring, information seeking, and health-based purchase decisions. In general, the results imply that health consciousness strongly distinguishes between clusters, with traditional experience seekers and health-conscious consumers leading these behaviors, and low-involvement consumers being the least involved.

Table 17. Mean scores of health involvement and information-seeking behaviors across consumer clusters*

	Traditional experience seekers	Health- conscious consumers	Disengaged Consumers	Eco-life- style ad- vocates	P- value**
I regularly monitor my health status (e.g., weight, blood pressure, check-ups)	3.7	3.3	2.65	3.23	<.001
I actively seek out information related to health and wellness.	3.86	3.65	2.54	3.55	<.001
I carefully consider health aspects when choosing food or beverages.	3.97	3.83	2.5	3.68	<.001
I read product labels to evaluate health-related information.	4.00	3.77	2.77	3.81	<.001

I frequently talk about health topics with others.	3.64	3.43	2.58	3.48	<.001
I follow a specific health-related routine or diet.	3.62	3.2	2.46	3.29	<.001
I often use mobile apps or devices to track my health.	3.38	2.9	2.58	2.84	0.08
I base my purchasing decisions on the health benefits of the product.	3.77	3.46	2.5	3.55	<.001
I consult professionals before using new health products.	3.32	2.77	2.62	2.9	0.01
Maintaining good health is a priority in my daily life.	4.04	3.84	2.85	3.9	<.001
I frequently seek out health-related information (e.g., online articles, books, research).	3.61	3.43	2.69	3.48	0.02
I follow health news and trends to stay informed.	3.55	3.16	2.50	3.52	<.001*
I consult health professionals or credible sources when I have health concerns.	3.53	3.49	2.50	3.42	<.001*
I regularly read or watch content about health in newspapers, magazines, books, TV, radio, or social media.	3.54	3.35	2.46	3.26	<.001*

*1: Strongly disagree, 5: Strongly agree. Kruskal–Wallis test applied., **p < .005.

The Chi-square findings (Table 18) indicate that cooking and eating habits vary significantly by consumer clusters, with a p-value of 0.05. Traditional experience seekers had a higher likelihood of preparing homemade meals from scratch, at 39%, compared to other groups. In contrast, health-conscious consumers tended

to prepare meals with a combination of fresh and packaged ingredients. Disengaged consumers indicated greater tendencies toward uncertainty or low involvement.

For shopping frequency in health food stores, the relationship between clusters was not significant since the p-value is 0.158. Even though there were some notable trends, health-conscious consumers were better represented in weekly shopping, whereas traditional experience seekers prevailed in such categories as "2–3 times a week". Disengaged consumers were less interested in shopping at health shops in general.

Table 18. Association between consumer clusters and eating/cooking habits and health food shop frequency (%).

	Tradi- tional ex- perience seekers	Health-Con- scious Con- sumers	Disengaged Consumers	Eco-life- style ad- vocates	P- value
The best statements describe eating and/or cooking habits most of the time					
Don't know	25.00	0.00	50.00	25.00	
I have normally eaten	20.00	20.00	20.00	40.00	
I usually heat ready meals in the oven/microwave oven (i.e., pizza, lasagne, frozen fish, chicken, and veg)	84.60	7.70	0.00	7.70	
I have normally been eating/cooking meals using a combination of fresh ingredients and packets/jars of ingredients/sauces	27.50	46.30	13.80	12.50	0.05*
I have normally been eating/cooking homemade meals from scratch using fresh ingredients	39.00	30.60	12.20	17.30	
Frequency of shopping in health food shops					

Never	35.90	39.70	14.10	10.30	
Once a month or less	37.80	37.80	10.80	13.50	
2-4 times a month	39.10	17.40	26.10	17.40	0.15
Once a week	21.40	50.00	0.00	28.60	
2-3 times a week	80.00	0.00	20.00	0.00	
4 or more times a week	35.90	39.70	14.10	10.30	

**p < .05 (two-tailed). Asterisks (*) denote statistically significant Chi-square test results.*

The Kruskal-Wallis H test showed significant differences in all five sustainability and agroecological value items among the four motivation-based consumer clusters ($p < 0.05$ for all; Table 19). Traditional experience seekers and eco-lifestyle activists generally rated these factors as more important than disengaged consumers, while health-conscious consumers usually fell in the middle. For instance, traditional experience seekers with a mean of 3.58 and eco-lifestyle activists gave the highest ratings for farms that aim to improve soil health. Disengaged consumers rated this the lowest, with a mean of 2.62. The preferences for herbal tea products made with agroecological farming practices received the best scores from eco-lifestyle activists and traditional experience seekers. As with the other ratings, disengaged consumers gave this the lowest rating with a mean of 2.77. Eco-lifestylers and traditional experience seekers scored above average in support for biodiversity, a preference for minimal, low-impact, or no-impact packaging, and information-seeking on farming practices, indicating a greater awareness of these sustainability concerns. In comparison, disengaged consumers paid the least attention to these features, suggesting that for them, environmental considerations are irrelevant when it comes to purchasing herbal tea.

*Table 19. Importance of sustainability and agroecological factors by motivation-based clusters**

Description	Tradi- tional ex- perience seekers	Health- Con- scious Consum- ers	Disen- gaged Consum- ers	Eco-life- style ad- vocates	P- value
I prefer farms that focus on improving soil health.	3.58	3.20	2.62	3.42	0.01

I value herbal tea products made using agroecological farming practices.	3.66	3.45	2.77	3.74	0.01
I support farms that promote and maintain local biodiversity.	3.76	3.55	2.69	3.65	0.01
I prefer herbal tea brands that use minimal or low-impact packaging. (Minimal packaging refers to packaging that uses fewer materials and generates less waste.)	3.72	3.51	2.73	3.77	0.02
I actively look for information about the farming practices used to produce my herbal tea.	3.51	2.86	2.81	3.23	0.01

*1 = Strongly disagree, 5 = Strongly agree. *p*-values are from Kruskal–Wallis *H* tests. *p* < 0.05 indicates statistical significance.

Chi-square tests were conducted to further understand whether willingness to pay for herbal tea with certain sustainability features differed across the four consumer groups distinguished by motivation (Table 20). For agroecological production, the desire to pay was significantly related to cluster membership. Eco-lifestyle activists had the highest percentage of respondents willing to pay a premium of 6-10% (26.8%) or 11-20% (11.9%). Health-conscious consumers were most likely to pay in the 11-20% range (52.4%). In contrast, disengaged consumers were more common in the 0% (33.3%) and 1-5% (20.8%) categories, indicating little price flexibility for agroecologically produced tea. Traditional experience seekers seemed to be more evenly distributed across categories, but had a significant number in the more than 30% group with 52.4%.

For herbal tea with sustainable or eco-friendly packaging, no significant association was found between cluster membership and willingness to pay, *p*-value of 0.293. Although Eco-lifestyle activists had fewer respondents in the 0% willingness category and higher numbers in the mid-to-high willingness ranges, these differences were not statistically significant. Overall, the willingness to pay for sustainable packaging varied more among all clusters, but the statistics supported no clear pattern.

Table 20. Willingness to pay for herbal tea with agroecological production and sustainable packaging (%)

	Traditional experience seekers	Health- Conscious Consum- ers	Disengaged Consumers	Eco-lifestyle advocates	P- value
Willing to pay for herbal tea that is produced using agroecological farming methods*					
0%	33.30	28.60	33.30	4.80	
1–5%	33.30	31.30	20.80	14.60	
6–10%	39.00	26.80	7.30	26.80	0.038
11–20%	31.00	52.40	4.80	11.90	
21–30%	40.70	33.30	11.10	14.80	
More than 30%	52.40	28.60	4.80	14.30	
Willing to pay for herbal tea that comes in sustainable or environmentally friendly packaging					
0%	40.00	40.00	20.00	0.00	
1–5%	28.30	34.80	19.60	17.40	
6–10%	44.40	28.90	11.10	15.60	0.293
11–20%	26.50	50.00	5.90	17.60	
21–30%	39.40	27.30	12.10	21.20	
More than 30%	52.90	23.50	5.90	17.60	

Values represent the percentage of respondents within each cluster selecting a given willingness-to-pay category. *p-values are from Pearson's Chi-square test. $p < 0.05$ indicates a significant association between cluster membership and willingness-to-pay category.

The below Chi-square test results (Table 21) indicate that awareness of whether herbal tea bags are compostable or biodegradable did not significantly differ across consumer clusters since the p-value is 0.849. This suggests that regardless of whether participants identified as traditional experience seekers, health-conscious consumers, disengaged consumers, or eco-lifestyle activists, their awareness levels were relatively similar. A notable proportion across all groups reported being aware and choosing compostable tea bags, while a smaller percentage admitted to ignoring this factor when purchasing.

Similarly, the analysis of disposal methods of herbal tea packaging and tea bags revealed no statistically significant differences between clusters, with a p-value of 0.756. Consumers across groups most commonly reported recycling packaging materials, while fewer indicated composting both the tea bag and packaging.

This highlights a generally consistent approach to disposal practices across different consumer segments, with no strong evidence of cluster-specific behaviors.

Table 21. Association between consumer clusters and awareness/disposal practices of herbal tea bags (%)

	Traditional experience seekers	Health-Con- scious Con- sumers	Disengaged Consumers	Eco-life- style ad- vocates	P- value
Awareness of whether the herbal tea bags you consume are compostable or biodegradable					
I am not sure.	40.00	20.00	0.00	40.00	
I don't use tea bags / I only consume loose-leaf herbal tea.	30.00	30.00	20.00	20.00	
No, I am not aware.	39.00	41.50	9.80	9.80	0.849
Yes, I am aware, but I ignore that when purchasing.	36.20	31.90	17.40	14.50	
Yes, I am aware, and I choose com- postable tea bags.	37.30	34.70	10.70	17.30	
Disposable method of herbal tea packaging and tea bags					
I am not sure how to dispose of them	33.30	44.40	11.10	11.10	
I throw both the tea bag and the packaging into the general waste	32.10	37.50	14.30	16.10	
I compost both the tea bag and the packaging	18.80	31.30	25.00	25.00	0.756
I compost the tea bag	39.30	32.10	17.90	10.70	

I recycle the packaging (e.g., paper, cardboard, plastic)	42.90	33.00	8.80	15.40
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5. Discussion

The findings obtained through this study offer a variety of new and insightful information on the multifaceted manner in which consumers view and interact with the consumption of herbal tea in Sweden by examining how choices differ between consumers and how these differences are related to health orientations, demographic characteristics, and sustainability values within an agroecological framework. The results provide valuable insights into the multidimensional nature of consumer decision-making and contribute to the broader literature on sustainable food and beverage consumption.

The first hypothesis, that there are significant differences among consumers in their herbal tea choices, is supported by the findings. Discrete segments of consumers emerged, and each of these segments was defined by a specific combination of orientations that differentiated them from each other: one specific segment perceived herbal tea primarily as a product that delivers wellness and health benefits, whereas another segment was more focused on the sensory pleasure and enjoyment obtained from the taste and aroma of the tea. There was also an additional group of consumers who placed sustainability values and environmental considerations at the forefront of their purchasing decisions. In contrast, other consumers showed relatively low interest and involvement in the category. These results are consistent with other research that highlights the salience of health and sensory attributes as the key driving forces underlying the consumption of herbal tea, and that cultural tradition is a significantly weaker factor influencing consumer choice in this category (Rocha, Moura and Cunha, 2020; Gupta *et al.*, 2023). In the Swedish context, these tendencies are particularly evident given the strong emphasis consumers place on health, informed choice, and transparency in food consumption (Landström *et al.*, 2007).

The findings related to the second hypothesis provide partial support. There were apparent differences between consumer clusters in terms of herbal tea consumption behaviour, health consciousness, and sustainability practices. Socio-demographic variables such as age, gender, education, and income were not strong predictors of consumer orientation. This suggests that values and attitudes are better predictors of Swedish herbal tea consumption and values compared to structural demographic factors. However, research in other European populations demonstrates that socio-demographic factors can be relevant predictors of herbal infusion consumption, significantly associated with age, gender, and education (Frackiewicz, Tarwacka and Drywien, 2023).

Since the socio-demographic analysis of consumer clusters did not reveal distinct differences in terms of age, gender, education, city of residence, or income level, these result suggests that demographic variables are not crucial in explaining variation in herbal tea consumption in Sweden. In contrast, attitudinal and

behavioural variables seemed to offer more robust cluster differentiation. Previous studies on food consumption in Sweden have also suggested that demographic profiles are less decisive than cultural and attitudinal orientations, particularly given the high level of education and widespread access to health and sustainability information in the Swedish population (Ekelund, Fernqvist and Tjärnemo, 2007). This would imply that, in mature and well-informed markets, socio-demographic segmentation may not be sufficient to account for consumer heterogeneity, highlighting the necessity of taking values and perceptions as key explanatory variables.

There are notable differences between consumer clusters in terms of their consumption of herbal tea. Whereas some clusters reported regular and sustained consumption of herbal tea, others claimed random consumption. These differences suggest that consumption behaviors are more driven by intrinsic motivations rather than by unifying cultural norms. For example, health-oriented consumers tend to include herbal tea as part of their everyday routines, which corroborates another research that defines herbal teas as functional drinks associated with general well-being (Obón *et al.*, 2021). By contrast, less devoted consumers reported occasional or limited use, perceiving herbal tea as a secondary option rather than a staple drink. This classification is consistent with general observations from the current literature, suggesting that the trends in beverage consumption are not uniform but instead are determined by personal lifestyle choices (Yngve, Scander and Almroth, 2023) and perceived individual benefits (Sousa *et al.*, 2024). The consumption of herbal tea is expressed as more heterogeneous and selective, with differences in behavior between clusters reflecting the various significances and values that consumers place on the product.

The results related to health consciousness indicated considerable variation between consumer clusters with respect to health consciousness and connected attitudes. Health-conscious consumers and traditional experience seekers consistently showed greater involvement in health-related behaviours such as monitoring their health, reading labels, and considering health when shopping for food and drinks. These clusters also reported more relevance in searching for health information and chatting about wellness, suggesting that their consumption patterns are set within wider health-oriented lifestyles. These results confirm previous research determining health consciousness as a primary driver of functional food and beverage consumption (Siró *et al.*, 2008; Annunziata and Vecchio, 2011), and justify that herbal tea is viewed by many as a wellness product and not a cultural staple (Gupta *et al.*, 2023).

Cooking and eating patterns also reflect these health orientations. Consumers with a health orientation were more inclined to cook from scratch using fresh foods and to shop frequently in health food stores. The role of cooking practices and shopping behaviour as indicators of broader health orientation (Bargiota *et*

al., 2013). In Sweden, where consumers are recognised for their high levels of information-seeking and demand for transparency (Grunert, Hieke and Wills, 2014), such differences emphasise the segmentation of the market: some clusters actively integrate herbal tea into a wider health-conscious lifestyle, while others position it as an occasional or peripheral choice. Overall, these variations support the hypothesis by demonstrating that health attitudes and behaviours are not evenly distributed across consumers but instead cluster according to distinct motivational profiles.

Consumer segments varied significantly in their attitudes towards sustainability and agroecological farming in herbal tea. Eco-lifestyle advocates and traditional experience seekers were more concerned with aspects related to soil health, biodiversity conservation, sustainable packaging, and disclosure of farming methods. These segments also indicated greater willingness to pay for environmentally friendly products, even if this meant a price premium. Disengaged consumers, in contrast, were not interested in sustainability-related features, suggesting a weak linkage between ecological values and purchasing decisions. Health-oriented consumers ranked in between, recognising the value of sustainability but ranking health benefits as their primary motivation. The segmentation illustrates the well-documented "attitude-behaviour gap" in sustainable consumption (Vermeir and Verbeke, 2006b). It is stated that consistent purchase or disposal practices do not always match concern for environmental matters.

These findings are consistent with earlier research stressing the increasing importance of sustainability in food and beverage markets, but also noting that ecological concerns are secondary to personal health and sensory reasons (Sousa *et al.*, 2024). In Sweden, where consumers are generally open to eco-labels and environmental messaging (Grunert, Hieke and Wills, 2014), variation across clusters implies that sustainability features can enhance influence among already motivated segments but are not enough in themselves to drive mainstream uptake. From an agroecological perspective, this suggests that herbal tea can serve as a connector between consumer well-being and environmental stewardship. Still, its success rests on pairing sustainability claims with health and lifestyle gains that resonate more widely. Overall, these results confirm the hypothesis by demonstrating that differences in sustainability and agroecological practice are not evenly distributed but instead vary widely across consumer clusters.

5.1 Limitations and Future Research Opportunities

The findings of this study should be interpreted with caution due to several limitations. First, the use of snowball sampling may have resulted in a sample that is not fully representative of the Swedish population, particularly with respect to

education level and health orientation. Second, the sample is geographically concentrated in urban areas, which may limit the generalizability of the findings to rural populations. Third, self-reported data may be subject to social desirability bias, particularly in relation to sustainability-related behaviors.

Four factors were extracted through PCA, while most items loaded on their respective factors; a few items loaded on factors that were not entirely consistent with their expected meaning. For Example, the health factor includes the item “I consider herbal tea as a part of my culture,” and the environment factor includes “Packaging looks nice.” However, these factor loadings are strong, with high reliability and consistency, as indicated by Cronbach’s alpha values (all above 0.70). This approach aligns with the exploratory nature of principal component analysis. These strongly statistically significant items were kept with changes to their originally proposed factor names. For example, the health factor shifted to Health and wellness orientation, and seeing herbal tea as part of one’s culture might also relate to feeling well or comforted. Nice packaging might also convey a sense of care for the environment; therefore, the environmental factor was re-defined as Environmental and Ethical Values. Even though some items did not fit perfectly in terms of meaning, the final factor structure was retained because it was statistically sound and reflected how respondents actually think.

Besides, the sample was relatively small ($n = 200$) and predominantly urban, with all participants residing in Stockholm, Malmö, and Gothenburg, which may influence the relevance of the results to rural areas, where access patterns and preferences may differ. Additionally, the high level of education among the respondents may have increased their health and environmental concerns, as education is linked to sustainability awareness in Sweden (Lidskog and Elander, 2012). A more varied sample would enhance external validity. Following, the research relied on self-reported survey data, which is subject to social desirability bias. The observed gap between stated attitudes and actual disposal practices underlines this limitation. Incorporating observational or experimental methods could yield more accurate insights.

Future research could therefore expand in several directions. Comparative studies across other Nordic countries could shed light on cultural similarities and differences in perceptions of herbal tea. Further, experimental interventions testing the effect of label designs, sustainability claims, or pricing strategies on purchasing decisions could inform marketing and policy. Finally, integrating agroecological supply-side perspectives, such as producer challenges, local sourcing opportunities, and small-scale agroecological farming, would provide a holistic understanding of how herbal tea could evolve into a mainstream sustainable beverage.

6. Conclusion

This study aimed to investigate the factors influencing Swedish consumers' perceptions, awareness, and consumption of herbal tea within an agroecological framework. The findings indicate that health consciousness is the strongest determinant of consumption, with health-oriented consumers more likely to incorporate herbal tea into their daily routines and to rely on product labels and information when making purchasing decisions. In contrast, disengaged consumers reported low involvement, treating herbal tea as an occasional alternative. Socio-demographic characteristics, such as age, gender, and education, were not significant predictors, suggesting that values and attitudes provide stronger explanations of consumer behavior than structural variables.

In addition to health motivations, practical barriers such as product availability and price were noted as limiting broader adoption. Sustainability values differentiated some consumer clusters, with eco-lifestyle advocates showing greater concern for agroecological practices; however, a gap remained between stated environmental concern and actual behavior. Overall, the study concludes that Swedish herbal tea consumption is shaped primarily by health and lifestyle values, with sustainability and cultural heritage playing secondary roles. From an agroecological perspective, herbal tea has the potential to link wellbeing with ecological responsibility, but further efforts are needed to improve accessibility, affordability, and the translation of sustainability values into everyday practices.

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Popular science summary

Herbal tea is made from plant parts such as leaves, fruits, flowers, or bark, rather than regular tea with caffeine. The main purpose of herbal tea is for health reasons and as a more natural drink option. This research explores how people in Sweden think about and use herbal tea, their main concerns, and how they relate it to sustainability.

This research shows that many people do not drink herbal tea every day, but most enjoy it weekly or twice a week. Mainly because of taste, health reasons, relaxation of the mind, and calming the body. However, age, gender, and income do not have much effect on whether to drink herbal tea. This research divided all herbal tea drinkers into four groups according to their main concern first group is the health-conscious group, the second is experience seekers who admire taste and aroma, the third group is people who are concerned about the environment when using herbal tea, and the last group they drink herbal tea very little and are not concerned much about anything.

Although many people show they think about environmentally friendly produced herbal tea. But considering buying it, the main reasons are price and convenience. High price, limited availability, limited knowledge of herbal tea, and a preference for other drinks, such as coffee or regular tea, lead to limited use of herbal tea in Sweden. Overall, this research shows that herbal tea could play an important role in agroecology if health consciousness is linked to environmental sustainability.

Appendix 1

Literature Review

	Reference	Aim of Study	Summary of Results	Theory/Method	Important Findings
1	McKay, D.L. and Blumberg, J.B., 2006. A review of the bioactivity and potential health benefits of peppermint tea (<i>Mentha piperita</i> L.). <i>Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives</i> , 20(8), pp.619-633.	To evaluate potential health benefits in peppermint tea (<i>Mentha piperita</i> L.), and its therapeutic applications.	Peppermint tea aids digestive health by relaxing gastrointestinal muscles, It also exhibits antimicrobial and antioxidant properties, respiratory relief as a decongestant, while its aroma may boost alertness, though further research is needed on cognitive effects.	Systematic review of existing literature on peppermint tea, analyzing in vitro, animal, and human clinical studies.	Peppermint tea has multiple health-promoting properties, particularly for digestion and antimicrobial defense; however, more clinical trials are needed to confirm some therapeutic claims.
2	Poswal, F.S., Russell, G., Macknochie, M., MacLennan, E., Adukwu, E.C. and Rolfe, V., 2019. Herbal teas and their	To comprehensively review the scientific literature on herbal teas and their potential health	Herbal teas (e.g., chamomile, peppermint, ginger, hibiscus, rooibos) contain polyphenols, flavonoids,	Focused on bioactive compounds, mechanisms of action, and clinical evidence supporting health	Herbal teas, rich in polyphenols, provide antioxidant and anti-inflammatory benefits, while varie-

	health benefits: a scoping review. <i>Plant Foods for Human Nutrition</i> , 74, pp.266-276.	benefits, focusing on their bioactive compounds, therapeutic effects, and traditional uses.	and essential oils with antioxidant, anti-inflammatory, antimicrobial, and digestive benefits.	claims and traditional medicinal uses alongside modern scientific research.	ties like peppermint, ginger, and rooibos support digestive and metabolic health. Additionally, hibiscus tea may aid cardiovascular health by lowering blood pressure, and chamomile promotes relaxation, though more clinical trials are needed to confirm these effects. Overall, herbal teas offer diverse health benefits but require further scientific validation.
3	Tomou, E.M., Peppas, E. and Trichopoulou, A., 2023. Consumption of herbal infusions/decoctions and tea in Greece: a Planeterranean perspective on the results of Hydria survey. <i>Journal of</i>	The study aimed to investigate the consumption of herbal infusions/decoctions and tea in a nationally representative sample	The Hydria survey revealed that ~50% of Greek adults regularly consume herbal infusions (e.g., chamomile, mountain tea), primarily for health benefits like digestion and relaxation, with higher	Cross-sectional analysis of self-reported consumption habits. Statistical methods: Logistic regression to identify demographic and lifestyle correlates. Planeterranean Framework: Evaluated herbal tea	Cultural and Medicinal Significance: Herbal infusions are deeply embedded in Greek tradition, often used as home remedies. Public Health Potential: Regular consumers showed better adherence to the

	<i>Translational Medicine</i> , 21(1), p.899.	of Greece, considering also their Planetary use.	usage among women, older adults, and educated populations, aligning with the sustainable, plant-based principles of the Planeterranean diet.	consumption as part of a sustainable, plant-centric dietary pattern.	Mediterranean diet, suggesting synergies with healthy dietary patterns. Sustainability Link: Local herbs (e.g., Sideritis) are eco-friendly crops, aligning with Planeterranean goals of biodiversity and low environmental impact.
4	Sõukand, R., Quave, C.L., Pieroni, A., Pardo-Santayana, M., Tardío, J., Kalle, R., Łuczaj, Ł., Svanberg, I., Kolosova, V., Aceituno-Mata, L. and Menendez-Baceta, G., 2013. Plants used for making recreational tea in Europe: a review based on specific research	To document and analyze plant species used for making recreational herbal teas across Europe, focusing on traditional knowledge and regional variations in usage.	The review encompassed 29 regions across Europe, identifying 142 plant taxa from 99 genera and 40 families used in recreational teas. The most commonly used families were Lamiaceae and Asteraceae, with <i>Origanum vulgare</i> L. being the most fre-	The researchers conducted a comprehensive literature review, analyzing both published and unpublished ethnobotanical studies from various European regions. They focused on plants used in food-related contexts, deliberately excluding those used solely for medicinal purposes. The analysis involved categorizing plant	The study revealed that while a diverse range of plants is used for making recreational teas, a few specific genera and species are preferred across multiple regions, indicating shared cultural practices. It also emphasized the need for further research into the pharmacological and nutritional properties of these commonly used plants to

	<p>sites. <i>Journal of ethnobiology and ethnomedicine</i>, 9, pp.1-13.</p>		<p>quently mentioned species, cited in 61% of the regions. The study highlighted regional preferences, such as <i>Rubus idaeus</i> L. in Eastern Europe, <i>Chamaemelum nobile</i> in Southern Europe, and <i>Rosa canina</i> L. in Central Europe</p>	<p>use reports and assessing the cultural importance of specific taxa across different regions.</p>	<p>ensure their safety for daily consumption. Additionally, the study underscored the importance of regional studies to deepen the understanding of local traditions and perceptions related to herbal tea consumption.</p>
5	<p>Landström, E., Hursti, U.K.K., Becker, W. and Magnusson, M., 2007. Use of functional foods among Swedish consumers is related to health-consciousness and perceived effect. <i>British Journal of Nutrition</i>, 98(5), pp.1058-1069.</p>	<p>The study aimed to assess Swedish consumers' familiarity with, attitudes toward, and consumption of functional foods (FFs). Specifically, it sought to identify how demographic factors, diet-related issues, and health attitudes influence the</p>	<p>A questionnaire was mailed to 2,000 randomly selected Swedish individuals aged 17–75, yielding 972 responses (48% response rate). The findings revealed that 84% of respondents were familiar with the concept of FFs, and 83% had consumed at least one of the seven FF products</p>	<p>quantitative survey methodology, Statistical analyses, including correlation and regression analyses</p>	<p>The study concluded that health-consciousness and perceived effectiveness of FFs are significant predictors of their consumption among Swedish consumers. Demographic factors, while influential, were less predictive than individual health attitudes and experiences. The typical Swedish FF consumer was characterized as well-</p>

		consumption of FFs in Sweden	presented in the survey. Among those who had consumed FFs, 25% reported perceiving a positive effect. Consumption was positively associated with personal health interest, belief in the efficacy of FFs, prior use of dietary supplements, and having diet-related health issues personally or within the family.		educated, health-conscious, and believing in the health benefits of FFs. The authors suggested that future research should explore diverse consumer groups to better understand varying attitudes and behaviors related to FF consumption.
6	Jaeger, S.R., 2006. Non-sensory factors in sensory science research. <i>Food Quality and Preference</i> , 17(1-2), pp.132-144.	This article aims to explore the influence of non-sensory factors on food choice and behavior. While sensory attributes like taste and aroma are crucial, the study emphasizes that other el-	The study discusses how non-sensory factors can profoundly affect consumer perceptions and choices. For instance, the context in which food is consumed, the information available about the product, and individual	multidisciplinary approach to studying food choice, integrating methods from sensory science, psychology, marketing, and sociology.	The article concludes that non-sensory factors are integral to understanding consumer food choices. Ignoring these elements can lead to incomplete or misleading conclusions in sensory science research. The paper calls for more comprehensive studies that

		<p>ements—such as convenience, price, production technology, personal health considerations, branding, and societal issues—also significantly impact consumer decisions. The paper seeks to highlight the complexity of food choices and the need to consider these non-sensory factors in sensory science research</p>	<p>consumer beliefs and attitudes can all influence food preferences and acceptance. The paper underscores that these factors can sometimes override sensory attributes in determining consumer behavior.</p>		<p>incorporate the various non-sensory factors affecting consumer behavior, to better predict and influence food preferences and choices.</p>
7	<p>Parment, A., Kotler, P. and Armstrong, G., 2021. <i>Principles of marketing: Scandinavian edition</i>. Pearson Higher Ed.</p>	<p>a comprehensive overview of fundamental marketing concepts, strategies, and practices. It emphasizes the importance of creating value for customers and building strong</p>	<p>a structured approach to marketing, beginning with an introduction to the marketing process and the significance of understanding the marketplace. It delves into</p>	<p>a pedagogical framework that combines theoretical foundations with practical insights.</p>	<p>the shift from traditional marketing approaches to more customer-centric and digitally integrated strategies. It highlights the necessity for marketers to adapt to changing consumer behav-</p>

		customer relationships in a rapidly evolving digital and global marketplace.	topics such as consumer behavior, market segmentation, targeting, positioning, product development, pricing strategies, distribution channels, and promotional tactics		iors, technological advancements, and global market dynamics.
8	Obón, C., Rivera, D., Fonollá, E., Alcaraz, F. and Attieh, L., 2021. A comparison study on traditional mixtures of herbal teas used in Eastern Mediterranean area. <i>Frontiers in pharmacology</i> , 12, p.632692.	to investigate traditional herbal tea mixtures prevalent in the Eastern Mediterranean region, focusing on their botanical composition, cultural significance, and medicinal uses. By analyzing both traditional and industrial formulations from countries like Greece, Lebanon, Syria, Iran, and Turkey, the researchers sought to document	analyzed 93 samples of herbal mixtures, identifying a wide array of plant species, predominantly from the Rosaceae, Asteraceae, Lamiaceae, Malvaceae, and Fabaceae families. Flowers were the primary components in these mixtures, often combined with leaves, fruits, and roots. The study highlighted that these herbal teas are commonly consumed	an interdisciplinary approach, the study combined ethnobotanical fieldwork with botanical and pharmacognostic laboratory analyses	The study underscored the cultural richness and botanical diversity of herbal tea traditions in the Eastern Mediterranean. It emphasized the importance of preserving traditional knowledge, especially given the increasing industrialization of herbal products.

		the diversity of ingredients and understand the regional variations in herbal tea preparations.	for their relaxing, digestive, and preventive health properties, rather than as treatments for specific ailments		
9	Rocha, C., Moura, A.P.D. and Cunha, L.M., 2020. Consumers' associations with herbal infusions and home preparation practices. <i>Food Quality and preference</i> , 86, p.104006.	to explore and understand consumers' perceptions and behaviors regarding the consumption and preparation of herbal infusions. Specifically, it sought to identify the associations consumers make with herbal infusions and to examine their home preparation practices, including adherence to recommended steeping times and methods	The research involved 489 Portuguese consumers who completed a web-based questionnaire. From this group, 60 participants were selected for an observational study. Findings revealed that over 27% of participants consumed at least one cup of herbal infusion daily, and more than 74% did so at least weekly. Most consumers used mugs or cups (52.0%) or teapots (44.1%) for preparation, predominantly	combining the evaluation of consumers' behaviours (assessed through direct self-reported measures) and indirect methods, such as free word association and remote observation.	This study reveals relevant information for herbal infusion producers, considering that many consumers stated to prefer herbal infusion bags instead of loose-leaf infusions. Convenience, a positive emotional state and wellbeing are the features that Portuguese consumers expect from these products.

			<p>opting for tea bags (77.7%). Approximately 80% removed the tea bags or leaves after steeping, primarily judging readiness by the infusion's color (53.1%). Notably, most consumers steeped their infusions for less than one minute, significantly shorter than the recommended four to ten minutes for common herbs like lemon verbena or peppermint.</p>		
10	<p>Sousa, A.C., Pádua, I., Gonçalves, V.M., Ribeiro, C. and Leal, S., 2024. Exploring tea and herbal infusions consumption patterns and behaviours: The case of</p>	<p>This study aimed to comprehensively explore the consumption patterns and behaviors surrounding tea and herbal infusions (THIs) among</p>	<p>Based on an online survey of 720 respondents, the study found that medium consumption (2–4 cups/week to 1 cup/day) was most common, particularly among those aged 40–</p>	<p>The researchers used a cross-sectional survey approach, distributed online, including both closed- and open-ended questions targeting consumption frequency, preparation practices, product types, and</p>	<p>The study found that age was a significant factor influencing both the type and frequency of THIs consumed. Despite a high level of education among respondents, many demonstrated risky practices,</p>

	Portuguese consumers. <i>Heliyon</i> , 10(7).	Portuguese consumers. Specifically, it sought to identify the types of THIs consumed, the socio-demographic influences on consumption, and the behaviors and practices associated with THI preparation and use.	60. Green tea was the most consumed tea, especially by younger participants, while herbal infusions such as citronella, chamomile, and lemon verbena were favored overall.	consumer knowledge. Statistical methods including multinomial logistic regression, PCA, and Kruskal-Wallis tests were applied to analyze patterns and associations between socio-demographics and THI-related behaviors.	such as not checking labels or using improper infusion methods. The findings suggest a disconnect between perceived health benefits of THIs and actual consumer practices, underscoring the need for educational initiatives and regulatory oversight to ensure safe consumption.
11	Wezel, A., Herren, B.G., Kerr, R.B., Barrios, E., Gonçalves, A.L.R. and Sinclair, F., 2020. Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. <i>Agronomy for Sustainable Development</i> , 40, pp.1-13.	aims to synthesize and clarify the core principles and elements of agroecology, examining how they can guide the transformation of food systems towards sustainability. The authors seek to establish a common understanding that supports the	The authors identify 13 key agroecological principles, encompassing ecological, economic, social, and cultural dimensions. These principles include recycling, input reduction, soil health, animal welfare, biodiversity, synergy, economic diversification, co-creation of	The article employs a comprehensive literature review methodology, analyzing existing frameworks, case studies, and policy documents related to agroecology. The authors critically assess how agroecological principles have been defined and applied in various contexts, aiming to distill a coherent set of guidelines that can	The review highlights that adopting agroecological principles can lead to more sustainable and equitable food systems by enhancing biodiversity, improving soil and water management, and fostering social inclusion.

		practical implementation of agroecological approaches globally.	knowledge, social values, fairness, connectivity, land and natural resource governance, and participation. The study emphasizes that these principles are interconnected and collectively contribute to the resilience and sustainability of food systems.	inform both practice and policy.	
12		aims to synthesize recent scientific findings on the health benefits of tea, particularly its role in preventing chronic diseases. The authors focus on the bioactive compounds in tea and their potential mechanisms in mitigating conditions such as	The authors conducted a comprehensive literature review, analyzing both epidemiological studies and clinical trials related to tea consumption and chronic disease prevention. They evaluated the bioavailability of tea polyphenols and their biological effects,	The review highlights that tea, especially green tea, is rich in polyphenolic compounds like catechins, with epigallocatechin-3-gallate (EGCG) being the most prominent. These compounds exhibit antioxidant, anti-inflammatory, and anti-carcinogenic properties.	The article concludes that while tea consumption is generally associated with health benefits, more rigorous and standardized research is needed to confirm these effects and understand the underlying mechanisms. The authors advocate for further studies to determine optimal con-

		cancer, cardiovascular diseases, diabetes, and neurodegenerative disorders.	considering factors like dosage, preparation methods, and individual metabolic differences.		sumption levels and to explore the potential of tea as a complementary approach in chronic disease prevention strategies.
13	Gupta, A., Sanwal, N., Bareen, M.A., Barua, S., Sharma, N., Olatunji, O.J., Nirmal, N.P. and Sahu, J.K., 2023. Trends in functional beverages: Functional ingredients, processing technologies, stability, health benefits, and consumer perspective. Food Research International, 170, p.113046.	This comprehensive review aims to explore the evolving landscape of functional beverages by examining the incorporation of functional ingredients, advancements in processing technologies, stability challenges, associated health benefits, and consumer perceptions.	The article identifies a growing interest in functional beverages enriched with bioactive compounds such as vitamins, minerals, probiotics, prebiotics, antioxidants, and plant extracts. These ingredients are associated with various health benefits, including improved digestion, enhanced immunity, and reduced risk of chronic diseases. The review discusses innovative processing technologies	The authors conducted an extensive literature review, analyzing recent studies and industry reports related to functional beverage development. They evaluated the efficacy of various functional ingredients, the impact of processing methods on product quality, and consumer behavior trends influencing market dynamics.	The review concludes that the functional beverage sector is poised for significant growth, driven by consumer demand for health-promoting products. However, challenges remain in ensuring the stability and bioavailability of functional ingredients, as well as in substantiating health claims to meet regulatory standards.

			like high-pressure processing, pulsed electric fields, and ultrasound treatment that help preserve the nutritional and sensory qualities of functional beverages while extending shelf life.		
14	Wargovich, M.J., Woods, C., Hollis, D.M. and Zander, M.E., 2001. Herbals, cancer prevention and health. <i>The Journal of nutrition</i> , 131(11), pp.3034S-3036S.	This article aims to explore the role of herbal medicines in cancer prevention and overall health. The authors discuss the historical use of herbs, their potential health benefits, and the scientific considerations regarding their safety and efficacy.	The authors highlight that herbal medicine has been practiced across various cultures for centuries. In recent times, there's been a resurgence in the use of herbal products, driven by the belief that they offer health benefits beyond conventional medicine.	This is a review article that synthesizes existing literature on the use of herbal medicines in cancer prevention. The authors analyze historical practices, current trends, and scientific studies to provide a comprehensive overview of the topic.	The article concludes that while herbal medicines hold promise for cancer prevention and health promotion, there is a need for more rigorous scientific research to fully understand their effects and interactions. The authors emphasize the importance of considering both the potential benefits and risks associated with herbal supplement use, especially concerning drug interactions

					and the need for standardized preparations.
15	Talib, W.H., Al-Ataby, I.A., Mahmud, A.I., Jawarneh, S., Al Kury, L.T. and Al-Yasari, I.H., 2020. The impact of herbal infusion consumption on oxidative stress and cancer: the good, the bad, the misunderstood. <i>Molecules</i> , 25(18), p.4207.	This review article aims to evaluate the antioxidant capacities, anticancer potential, and possible toxicity of eleven widely consumed herbal infusions. The authors seek to understand how these infusions influence oxidative stress and their role in cancer prevention or progression.	The study highlights that herbal infusions are popular beverages consumed daily for various reasons. Many of these infusions, prepared from plants like green tea, chamomile, lemon verbena, and rosemary, exhibit potent antioxidant effects. These antioxidants can neutralize reactive oxygen species (ROS), thereby potentially reducing oxidative stress and the risk of chronic diseases, including cancer. However, the authors caution that uncontrolled consumption may lead to toxicity	The authors conducted a comprehensive literature review, analyzing studies that investigated the antioxidant properties, anticancer effects, and toxicity of eleven commonly consumed herbal infusions.	The review concludes that while herbal infusions can serve as dietary antioxidants and may offer protective effects against cancer development, their consumption should be approached with caution. The authors advocate for further research to fully understand the mechanisms, optimal dosages, and potential interactions of these herbal infusions to ensure their safe and effective use in health promotion and disease prevention.

			and diminished antioxidant activity.		
16	Manteiga, R., Park, D.L. and Ali, S.S., 1997. Risks associated with consumption of herbal teas. <i>Reviews of Environmental Contamination and Toxicology: Continuation of Residue Reviews</i> , pp.1-30.	This review article aims to assess the potential health risks associated with the consumption of herbal teas. The authors focus on identifying naturally occurring toxic compounds in herbal teas and evaluating the extent of toxicological studies conducted on these beverages.	The authors highlight that while herbal teas are widely consumed for their perceived health benefits, many contain naturally occurring toxic compounds such as pyrrolizidine alkaloids (PAs), tannins, and safrole. These substances have been linked to various health issues, including liver toxicity and carcinogenic effects.	The article is a comprehensive literature review that synthesizes existing research on the toxicological aspects of herbal teas. The authors analyze studies that have identified toxic compounds in herbal teas and discuss the potential health risks associated with these substances.	The review concludes that while herbal teas are generally considered safe, certain varieties may pose health risks due to the presence of toxic compounds. The authors recommend that consumers exercise caution and that regulatory agencies implement stricter quality control measures to ensure the safety of herbal tea products.
17	Ogundijo, D. A., Tas, A. A., & Onarinde, B. A. (2022). Age, an important sociodemographic determinant of food choices and purchasing habits. <i>Frontiers in Nutrition</i> , 9.	This study aimed to investigate how age influences food purchasing behaviors and the use of nutrition labels among university staff in England.	The findings revealed that age significantly impacted purchasing behaviors, while other sociodemographic factors like education level, gender,	online questionnaire to collect data on food purchasing behaviors and nutrition label usage. Ordinal regression analyses were performed to assess the relationship between age and	The research concluded that age is a significant determinant of food purchasing decisions and nutrition label usage among university staff. The study sug-

			employment status, and ethnicity did not show a significant effect.	various extrinsic and intrinsic factors influencing food choices.	gests that nutrition education and labeling strategies should be tailored to different age groups to promote healthier eating habits.
18	Ekelund L, Tjärnemo H. Consumer preferences for organic vegetables-the case of Sweden. In XV International Symposium on Horticultural Economics and Management 655 2004 Aug 29 (pp. 121-128).	This study aimed to explore Swedish consumers' preferences and perceptions regarding organic vegetables, focusing on how factors like production method (organic vs. conventional), origin (Swedish vs. imported), and price influence purchasing decisions.	Findings revealed that the origin of the product had a more significant impact on consumer preference than the production method. Specifically, consumers showed a stronger preference for Swedish-grown vegetables over imported ones, regardless of whether they were organically or conventionally produced	A conjoint analysis was performed to assess the relative importance of different product attributes (origin, production method, price) in consumer decision-making.	The research concluded that while organic labeling influences consumer perceptions, the origin of the product plays a more substantial role in purchasing decisions among Swedish consumers. The preference for locally produced vegetables suggests that marketing strategies should emphasize product origin alongside organic certification.
19	Chandrasekara, A. and Shahidi, F., 2018. Herbal beverages: Bioactive compounds and their role	Aims to explore the bioactive compounds present in herbal beverages and	bioactive compounds exhibit a range of biological effects,	The article is a comprehensive literature review that synthesizes existing research on the bioactive	The review concludes that herbal beverages are potential rich sources of phytochemicals that may

	in disease risk reduction- A review. <i>Journal of traditional and complementary medicine</i> , 8(4), pp.451-458.	their potential roles in reducing the risk of non-communicable diseases (NCDs)	such as antioxidant, antibacterial, antiviral, anti-inflammatory, antiallergic, antithrombotic, vasodilatory, antimutagenic, anticarcinogenic, and anti-aging activities	compounds found in herbal beverages.	help in reducing disease risk conditions and, therefore, in the management of NCDs.
20	Grunert, K.G., Hieke, S. and Wills, J., 2014. Sustainability labels on food products: Consumer motivation, understanding and use. <i>Food policy</i> , 44, pp.177-189.	To explore consumer motivation, understanding, and use of sustainability labels on food products. The researchers aimed to understand how consumers perceive these labels, how well they comprehend them, and the extent to which these labels influence their purchasing behavior.	Many consumers support the idea of sustainability in food production. However, their understanding of specific labels is often limited. Use of labels in actual purchasing decisions is not consistent and context-dependent.	Based on consumer behavior theories, particularly motivation and information processing.	There is a gap between attitude and actual behavior regarding sustainable food choices. Simple, clear, and credible labels are more likely to be used and trusted. Too many different labels can lead to confusion or disinterest.

21	Vermeir, I. and Verbeke, W., 2006. Sustainable food consumption: Exploring the consumer “attitude–behavioral intention” gap. <i>Journal of Agricultural and Environmental ethics</i> , 19, pp.169-194.	The aim of this study was to explore the gap between consumer attitudes toward sustainable food consumption and their actual behavioral intentions. Vermeir and Verbeke sought to understand why, despite growing awareness and positive attitudes toward sustainability, many consumers do not consistently purchase or consume sustainable food products.	The study found that although a significant portion of consumers express concern for sustainability and are generally in favor of sustainable food systems, these attitudes often fail to translate into actual purchasing behavior.	The theoretical framework of the study was grounded in the Theory of Planned Behavior (TPB) , extended with additional constructs such as perceived consumer effectiveness and involvement . The authors used a quantitative research design , collecting data through consumer surveys in Belgium.	An important finding from the study was the strong role of involvement and personal relevance in shaping behavioral intention. Consumers who felt more involved in sustainability issues and who perceived their actions as impactful were more likely to intend to purchase sustainable foods.
22	Scander, H., Montegudo, C., Nilsen, B., Tellström, R. and Yngve, A., 2018. Beverage consumption patterns and energy contribution from	The aim of this study was to examine beverage consumption patterns among the Swedish population, focusing on the	The results revealed that beverage consumption patterns varied significantly by meal type. Water was the most commonly	The methodology was based on data from a national dietary survey conducted in Sweden, using self-reported food records	One of the key findings of the study was that beverages are a significant contributor to daily energy intake, particularly when

	<p>beverages per meal type: results from a national dietary survey in Sweden. <i>Public health nutrition</i>, 21(18), pp.3318-3327.</p>	<p>types of beverages consumed and their energy contributions across different meal types.</p>	<p>consumed beverage overall, especially during main meals, while sugar-sweetened beverages (SSBs) were more frequently consumed with snacks and among younger age groups. Coffee and milk were also prominent contributors, particularly during breakfast. The study highlighted that certain beverages, notably alcoholic drinks and sugar-sweetened beverages, contributed disproportionately to energy intake, especially during dinner and snack occasions. These findings emphasize the importance of considering not just</p>	<p>collected over a four-day period.</p>	<p>consumed outside of structured meals. The energy from beverages can add up quickly, especially when high-calorie drinks like alcohol and sugary sodas are consumed regularly. The researchers concluded that public health strategies aiming to improve diet quality should take beverage choices into account and consider promoting water and other low-calorie drinks, particularly during meals.</p>
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			what people drink, but also when they drink it in relation to energy balance and dietary health.		
23	Mauris, G. and Scander, H., 2024. G. 6 Tea in Sweden—Tradition and consumption. <i>Tea Cultures of Europe: Heritage and Hospitality: Arts & Venues/ Teaware & Samovars/ Culinary & Ceremonies</i> , p.407.	The aim of this chapter is to explore the cultural, historical, and contemporary dimensions of tea consumption in Sweden.	The authors describe how tea was historically introduced to Sweden through trade and elite social circles, and while it never surpassed coffee in popularity, it developed its own niche. In particular, tea is associated with calmness, wellness, and intimate social moments—often consumed during quiet, reflective times or as part of the Swedish “fika” tradition, though coffee usually dominates that ritual. The	The methodology behind the chapter is largely qualitative and historical, drawing from cultural analysis, previous literature, and possibly interviews or ethnographic observation.	One important finding is that while tea remains a secondary beverage in terms of national consumption volume, its symbolic and emotional value is quite significant, particularly in contexts of comfort, health, and personal ritual.

			chapter highlights regional differences in tea preferences, demographic trends in tea consumption (e.g., higher among women and older adults), and the increasing popularity of specialty and herbal teas in urban areas.		
24	Lundqvist, P., 2016. Taste for hot drinks—the consumption of coffee and tea in two Swedish nineteenth-century novels. <i>History of Retailing and Consumption</i> , 2(3), pp.171-192.	aims to explore how coffee and tea consumption is portrayed in two Swedish nineteenth-century novels, focusing on the complexities of consumer practices. The study seeks to understand how these hot drinks functioned as cultural symbols	The analysis reveals that coffee and tea are not merely beverages but carry significant cultural weight in the novels. Their consumption is intricately linked to social status and gender roles, serving as markers of refinement, domesticity, or social aspiration. The study highlights the nuanced	Employing literary analysis, the study examines the narratives of the selected novels to uncover the social meanings attached to coffee and tea consumption. This approach allows for an in-depth understanding of how literature reflects and shapes societal attitudes toward these beverages.	<p>Social Stratification: Coffee and tea consumption delineates class boundaries, with their presence and manner of consumption indicating social standing.</p> <p>Gender Roles: The preparation and serving of these beverages often fall within the domestic sphere,</p>

		reflecting broader social dynamics, particularly concerning class and gender	ways in which these drinks are embedded in the characters' lives and societal structures.		reinforcing traditional gender roles and expectations. Cultural Identity: The choice between coffee and tea can signify cultural affiliations or aspirations, reflecting broader societal trends and influences.
25	Czarniecka-Skubina, E., Korzeniowska-Ginter, R., Pielak, M., Sałek, P., Owczarek, T. and Kozak, A., 2022. Consumer choices and habits related to tea consumption by poles. <i>Foods</i> , 11(18), p.2873.	The study aimed to analyze the habits of Polish consumers regarding tea consumption, including brewing methods and choices related to tea. It sought to describe the characteristics of tea consumers and present their segmentation based on consumer choices and habits regarding tea consumption	six distinct groups of tea consumers were identified: Occasional tea gourmets Yerba mate drinkers Tea gourmets Occasional consumers	Methodology: The researchers employed the Computer-Assisted Web Interviewing (CAWI) method to collect data from 1,700 adult tea consumers in Poland. Data Collection: The survey gathered information on consumer choices and habits related to tea consumption, including brewing methods, places of consumption, and factors determining tea choices.	Dominance of Black Tea: Black tea remains the predominant choice among Polish consumers, accounting for approximately 70% of the market. Limited Variety: There is a low consumption of other tea types, such as green (7%) and red (1.5%) teas. Traditional Brewing Methods: Most consumers

			<p>Undemanding tea consumers</p> <p>Occasional strong tea consumers</p> <p>General Preferences: The majority of Polish tea consumers preferred black tea, typically in bags, brewed in cups or glasses for up to 3 minutes.</p> <p>Consumption Habits: Tea was usually consumed without additives, at home, several times a week, during breakfast and between meals.</p>	<p>Analysis: Cluster analysis was used to identify distinct groups of tea consumers based on their behaviors and preferences</p>	<p>use simple brewing methods, favoring convenience over elaborate preparation.</p> <p>Knowledge Gap: There is a notable lack of awareness about the health benefits associated with different types of tea.</p> <p>Consumer Segmentation: The identification of distinct consumer segments provides insights for targeted marketing and education strategies</p>
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			<p>Brand Preference: Lipton was the most popular brand among respondents.</p> <p>Health Awareness: Consumers exhibited limited knowledge regarding the health benefits of tea.</p>		
26	<p>Arhin, I., Li, J., Mei, H., Amoah, M., Chen, X., Jeyaraj, A., Li, X. and Liu, A., 2022. Looking into the future of organic tea production and sustainable farming: A systematic review. <i>International Journal of Agricultural Sustainability</i>, 20(5), pp.942-954.</p>	<p>The study aimed to examine the challenges and prospects of organic tea production within the framework of sustainable agriculture. By conducting a systematic review, the authors sought to provide a comprehensive overview of the current state of organic tea farming, identify the</p>	<p>organic tea production faces several significant challenges, including high competition for agricultural land, urbanization in tea-growing regions, and the conversion of organic lands for other purposes. Additionally, biotic and abiotic stresses, such as pests, diseases, and climate change effects, pose</p>	<p>Employing a systematic review methodology, the researchers analyzed existing literature on organic tea production and sustainable farming practices. This approach involved a thorough examination of studies related to the environmental, economic, and social aspects of organic tea cultivation, as well as the policies and market dy-</p>	<p>The study highlighted that while the organic tea industry is gaining attention due to consumer demand for healthier and environmentally friendly products, it still lacks sufficient support to overcome existing challenges. Key issues include land competition, climate-related stresses, and limited knowledge of organic farming practices among</p>

		obstacles hindering its development, and explore potential pathways for future growth and sustainability.	threats to tea cultivation. The lack of knowledge about organic practices and the high costs associated with organic inputs further hinder the adoption of sustainable farming methods. Despite these obstacles, the study found promising trends, such as the growth of organic tea markets in the Asia-Pacific region and increased support from stakeholders committed to sustainable agriculture.	namics influencing the industry. The review synthesized findings from various sources to identify common themes, challenges, and opportunities within the sector.	producers. However, the expansion of organic tea markets, particularly in Asia-Pacific, and the commitment of stakeholders to implement supportive policies and provide necessary resources, indicate a positive outlook for the industry's future. The authors emphasized the need for collaborative efforts among governments, organizations, and farmers to address these challenges and promote the sustainability of organic tea production.
27	Damayanti, D., Suharno, S. and Ainuri, M., Productivity Improvement Based on Lean and Green Productivity in	The study aimed to enhance productivity in the herbal tea production line by integrating lean and	The analysis revealed that the production line had a low productivity index of	The researchers employed a combination of lean manufacturing tools and green productivity	Implementing lean and green strategies led to notable improvements. Process Cycle Efficiency (PCE) increased from

	<p>Herbal Tea Production Line CV. DM. <i>agriTECH</i>, 44(1), pp.80-89.</p>	<p>green productivity concepts. Specifically, it sought to identify non-value-adding activities, reduce waste, and optimize energy consumption, thereby improving overall production efficiency and environmental sustainability.</p>	<p>0.4 on a scale of 1, indicating significant inefficiencies. Non-value-adding activities, particularly excessive storage, accounted for 91.17% of total production time. Solid waste was primarily due to leaf spillage (62.75%), defective tea bags (32.04%), and tea powder waste (5.21%). Energy consumption was also high, with electricity usage at 11.78 kWh per batch. These findings underscored the need for targeted interventions to enhance productivity and sustainability.</p>	<p>strategies. Lean tools included Value Stream Mapping (VSM), Process Activity Mapping (PAM), and the Objective Matrix (OMAX) to assess and improve production processes. Green strategies focused on energy consumption analysis and waste reduction through mass balance and emission calculations. Data were collected via observations and interviews, and analyzed to identify inefficiencies and propose improvements.</p>	<p>7.97% to 9.05%, indicating better utilization of production time. Electricity consumption was reduced by 43.37% by turning off idle machines and optimizing equipment usage. Solid waste decreased through maintenance and repair of filling machines, and better handling of raw materials. These enhancements demonstrate the effectiveness of integrating lean and green approaches in improving both productivity and environmental performance in herbal tea production.</p>
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28	<p>Huda, H.S.A., Majid, N.B.A., Chen, Y., Adnan, M., Ashraf, S.A., Roszko, M., Bryła, M., Kieliszek, M. and Sasidharan, S., 2024. Exploring the ancient roots and modern global brews of tea and herbal beverages: A comprehensive review of origins, types, health benefits, market dynamics, and future trends. <i>Food Science & Nutrition</i>, 12(10), pp.6938-6955.</p>	<p>The study aimed to provide a comprehensive overview of tea and herbal beverages, tracing their historical origins, examining their various types, exploring associated health benefits, analyzing market dynamics, and forecasting future trends. By synthesizing existing literature, the authors sought to offer insights into the cultural significance, chemical composition, and evolving consumer preferences related to these beverages.</p>	<p>The review highlighted the evolution of tea from its ancient origins in China to its current status as a globally consumed beverage. It detailed various types of teas, including black, green, oolong, and herbal infusions, noting their unique processing methods and flavor profiles. The study also discussed the health benefits associated with tea consumption, such as antioxidant properties and potential roles in disease prevention. Market analysis revealed a growing demand for herbal teas, driven by</p>	<p>Employing a systematic review methodology, the researchers analyzed a wide range of scholarly articles and industry reports. This approach allowed for an in-depth examination of the historical development, classification, health implications, and market aspects of tea and herbal beverages. The study emphasized the importance of understanding both traditional practices and modern innovations in the context of global consumption patterns.</p>	<p>The study underscored the rich cultural heritage and diversity of tea and herbal beverages. It emphasized the significance of bioactive compounds found in these drinks, which contribute to their health-promoting properties. The authors noted a shift in consumer preferences toward herbal teas, influenced by increasing awareness of health and wellness. Additionally, the research pointed to the potential for innovation in product development and marketing strategies to cater to evolving tastes and preferences.</p>
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			health-conscious consumers and cultural trends.		
29	Fu, Y., Yang, J.C., Cunningham, A.B., Towns, A.M., Zhang, Y., Yang, H.Y., Li, J.W. and Yang, X.F., 2018. A billion cups: The diversity, traditional uses, safety issues and potential of Chinese herbal teas. <i>Journal of ethnopharmacology</i> , 222, pp.217-228.	The study aimed to summarize the current knowledge of plant species used as herbal teas by different cultural groups in various regions of China. It focused on the teas' perceived traditional healthcare functions, related phytochemical and pharmaceutical research, and safety issues. The research sought to fill the knowledge gap regarding the diversity and usage of herbal teas across China	The literature review identified 759 plant species used as herbal tea in China, with the market survey revealing an additional 23 species. Most species belonged to the Leguminosae, Compositae, and Lamiaceae families. Records indicated consumption of herbal teas in 22 provinces and among 14 ethnic minority groups, with Southern China utilizing up to 82% of the total species. Thirty categories of traditional healthcare functions were linked with herbal	The researchers conducted a comprehensive literature review and a market survey. The literature review was based on published ethnobotanical studies of herbal teas in China	The study highlighted the rich diversity of herbal tea species in China, with significant traditional healthcare functions. It emphasized the need for more pharmaceutical and phytochemical research to assess the wide range of perceived health benefits. The research underscored the importance of studying herbal teas through an ethnopharmacological perspective, considering traditional knowledge in pharmacological research design. It also pointed out the necessity to address product safety and sustainabil-

			<p>teas, including clearing away heat, relieving toxicity, and suppressing cough. Phytochemical and pharmaceutical evidence supported the claimed healthcare benefits of some teas. While generally safe, overdoses and unapproved mixtures posed health risks. Market prices for most herbal teas ranged between 100 and 200 RMB (US\$15–30) per kilogram.</p>		<p>ity issues to transform traditional applications into efficient health-boosting functional products</p>
30	<p>Long, X., Ranjitkar, S., Waldstein, A., Wu, H., Li, Q. and Geng, Y., 2024. Preliminary exploration of herbal tea products based on traditional</p>	<p>The study aimed to investigate and analyze the traditional knowledge related to herbal tea plants used by local communities in the Qianxinan Buyi</p>	<p>The study documented 114 plant species used for herbal teas, representing 60 families and 104 genera. Approximately 61% of these plants</p>	<p>Data related to the use of herbal tea plants in this study were collected through semi-structured interviews and participatory observations in four villages in</p>	<p>The research highlighted the rich diversity of herbal tea plants in Southwest Guizhou and the deep-rooted traditional knowledge associated with</p>

	<p>knowledge and hypotheses concerning herbal tea selection: a case study in Southwest Guizhou, China. <i>Journal of Ethnobiology and Ethnomedicine</i>, 20(1), p.1.</p>	<p>and Miao Autonomous Prefecture, Guizhou Province, China. Additionally, the research sought to explore hypotheses concerning the selection of herbal tea plants and to initiate preliminary efforts in developing herbal tea products using various processing techniques.</p>	<p>were wild-harvested, and 11 species were identified as exotic. The Asteraceae family had the highest representation with 20 species. Thirty-three medicinal functions were associated with these herbal teas, with "clearing heat-toxin" and diuresis being the most common.</p>	<p>Qianxinan. Quantitative indicators, including the relative frequency of citation (RFC) and the relative importance (RI) value, were calculated, and the availability of plants was also evaluated. General linear model was performed to examine the relationship between the frequency of citation and resource availability, as well as the correlation between the relative frequency of citation and the relative importance, to test both the resource availability hypothesis and the versatility hypothesis. <i>Centella asiatica</i> tea was processed</p>	<p>their use. The findings supported the resource availability and versatility hypotheses, indicating that local communities select herbal tea plants based on their availability and multiple uses. The successful processing of <i>Centella asiatica</i> into various tea forms suggests potential for developing new herbal tea products that align with modern consumption preferences. This study underscores the importance of preserving traditional knowledge and promoting sustainable utilization of herbal tea resources</p>
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				using techniques from green tea, black tea and white tea, with a preliminary sensory evaluation conducted.	
31	Kinki, A.B., 2021. A review on the production and uses of herbal teas. <i>J. Nutrition and Food Processing</i> , 4(2), pp.1-3.	The study aimed to compile and analyze information on the production and uses of herbal teas, with a particular focus on Ethiopia. It sought to highlight the historical significance, health benefits, and sensory qualities of herbal teas, as well as to address the lack of comprehensive data on their use in Ethiopia.	Herbal teas are traditionally prepared by infusing or decocting various plant parts, such as leaves, seeds, barks, and flowers. These beverages are known for their health-promoting properties, including antioxidant, anti-inflammatory, antibacterial, antiviral, and antiallergic effects. The review highlighted that herbal teas are caffeine-free, making them suitable for promoting sleep and hy-	This review utilized a comprehensive analysis of existing literature on herbal teas, encompassing their historical background, production methods, chemical composition, health benefits, and sensory attributes. The study synthesized information from various sources to provide a detailed overview of herbal tea practices and their implications.	The study emphasized the rich diversity of herbal teas and their significant health benefits, particularly in the Ethiopian context. It noted the presence of various phytochemicals, such as tannins, flavonoids, and alkaloids, which contribute to the therapeutic properties of herbal teas. The review also pointed out the need for further research to explore the nutritional profiles and potential health impacts of herbal teas, as well as to raise awareness about their benefits.

			dration. Sensory qualities of herbal teas are attributed to volatile aroma compounds, contributing to their distinctive flavors and aromas		
32	Liu, Y., Guo, C., Zang, E., Shi, R., Liu, Q., Zhang, M., Zhang, K. and Li, M., 2023. Review on herbal tea as a functional food: classification, active compounds, biological activity, and industrial status. <i>Journal of Future Foods</i> , 3(3), pp.206-219.	The study aimed to comprehensively review herbal tea as a functional food, focusing on its classification, active compounds, biological activities, and industrial status. The authors sought to elucidate the health benefits associated with herbal teas and assess their potential in the functional food industry.	The review categorized herbal teas into different types based on the plant parts utilized, such as leaves, flowers, roots, seeds, and fruits. It identified various bioactive compounds prevalent in herbal teas, including flavonoids, alkaloids, polysaccharides, and glycosides, which contribute to their health-promoting properties. The biological activi-	The researchers conducted an extensive literature review, analyzing various studies related to herbal teas. They examined the classification of herbal teas based on plant parts used and preparation methods, identified key bioactive compounds present in different herbal teas, and evaluated their biological activities. Additionally, the study assessed the current industrial status of herbal teas, including production,	The authors emphasized the significant potential of herbal teas as functional foods due to their rich composition of bioactive compounds and associated health benefits. They pointed out the necessity for further research to fully understand the mechanisms underlying these health effects and to establish standardized protocols for quality assessment. The study also underscored the importance of regulatory frameworks to ensure the

			ties of these compounds encompass antioxidant, anti-inflammatory, antimicrobial, and other beneficial effects. The study also highlighted the growing industrial interest in herbal teas, noting their increasing popularity in the functional food market and the need for standardized quality control measures.	market trends, and regulatory aspects.	safety and efficacy of herbal tea products in the market.
33	Mensah, M.L., Komlaga, G., Forkuo, A.D., Firempong, C., Anning, A.K. and Dickson, R.A., 2019. Toxicity and Safety Implications of Herbal Medicines. <i>Herbal medicine</i> , p.63.	The chapter aims to explore the toxicity and safety concerns associated with the use of herbal medicines in Africa. It seeks to highlight the potential risks posed by certain herbal remedies, discuss factors	The review revealed that while many herbal medicines are beneficial, some possess toxic properties that can lead to adverse health effects. Factors contributing to toxicity include incorrect iden-	The authors conducted a comprehensive review of existing literature on the toxicity and safety of herbal medicines commonly used in African traditional medicine. They analyzed case studies, clinical reports, and scientific	The study underscores the importance of implementing stringent quality control, proper identification of plant materials, and standardized preparation methods to mitigate the risks associated with herbal medicines. It advocates for

		contributing to their toxicity, and emphasize the need for proper regulation and standardization to ensure consumer safety.	tification of plant species, contamination with heavy metals or pathogens, improper preparation methods, and interactions with conventional drugs. The lack of standardized dosages and quality control measures further exacerbates the risk of toxicity.	research to identify patterns of adverse effects, toxic compounds present in certain herbs, and the impact of preparation and administration methods on safety	increased public awareness, education of traditional healers, and collaboration between traditional practitioners and modern healthcare providers to ensure the safe use of herbal remedies. The authors also call for the establishment of regulatory frameworks to monitor and control the production and distribution of herbal medicines in Africa
34	Alexieva, I.N., Popova, A.T. and Mihaylova, D.S., 2020. Trends in herbal usage—a survey study. <i>Food Research</i> , 4(2), pp.500-506.	The study aimed to provide up-to-date information regarding trends in herbal usage among citizens in the city of Plovdiv, Bulgaria. It sought to explore the prevalence of herbal consumption, the types of	The survey revealed that herbal teas are the most preferred form of herbal consumption, with 82% of respondents indicating regular use. Chamomile (<i>Matricaria recutita L.</i>) and thyme (<i>Thymus vul-</i>	The researchers conducted a survey involving 114 respondents over a 60-day period in 2018. The questionnaire collected data on the types of herbs used, methods of preparation, reasons for consumption, and attitudes toward herbal products. The study	The research highlighted a strong tradition of herbal usage in Plovdiv, with a significant portion of the population relying on herbal remedies for common ailments. The preference for herbal teas underscores the importance of these beverages in daily

		herbs used, reasons for their use, and public perceptions surrounding herbal remedies	<i>garis L.</i>) were identified as the most commonly used herbs. The primary reason for herbal use was the treatment of the common cold, followed by general health maintenance. The study also found that while some individuals gather herbs themselves, a significant portion purchases them from supermarkets, local markets, or pharmacies	focused on understanding the role of herbal remedies in daily life and their perceived benefits among the urban population	health practices. The study also pointed out the need for proper education on the identification and preparation of medicinal plants to ensure safe and effective use.
35	Kong, W., Jiang, L., Cui, Q., Xu, J., Yuan, Q. and Liu, J., 2024. Global research trends on herbal tea: A bibliometric and visualized analysis. <i>Beverage Plant Research</i> , 4(1).	The study aimed to provide a comprehensive overview of global research trends in the field of herbal tea from 2000 to 2023. By employing bibliometric analysis,	The analysis revealed an overall upward trend in herbal tea research publications over the studied period. China, the USA, Italy, Poland, and Malaysia emerged as leading	Utilizing CiteSpace, a bibliometric visualization tool, the researchers analyzed 588 articles and reviews related to herbal tea, sourced from the Web of Science database. The	The study underscored the significant role of herbal tea in health promotion and disease prevention, attributing its benefits to bioactive components like phenolic compounds.

		the authors sought to identify key contributors, collaboration networks, research hotspots, and emerging areas within herbal tea research	contributors. However, collaboration networks among authors and institutions were found to be in the early stages of development. Key research themes identified included antioxidant activity, phenolic compounds (notably flavonoids), and the safety aspects of herbal tea. Additionally, fruit tea was highlighted as an emerging research frontier.	analysis focused on publication trends, authorship, country and institutional contributions, keyword co-occurrence, and citation patterns to map the knowledge structure and evolution of the field.	Despite the growing interest, the research community exhibits limited collaboration, suggesting the need for enhanced international and interdisciplinary partnerships. The authors also pointed out the necessity for improved regulatory frameworks to ensure the safety and efficacy of herbal teas, given their diverse types and complex functions.
36	Sishi, M., 2018. <i>Evaluation of rooibos waste plant material for the development of a high-value herbal tea product</i> (Doctoral dissertation, Stellenbosch: Stellenbosch University).	The study aimed to explore the potential of utilizing rooibos (<i>Aspalathus linearis</i>) processing waste specifically fine dust and coarse stems to develop high-value	The optimized extraction process for rooibos dust yielded consistent results across different production batches, producing extracts with sensory profiles similar	The research employed a combination of extraction optimization and sensory evaluation methods. Hot water extraction techniques were optimized to maximize the yield of soluble solids from rooibos	The study concluded that rooibos dust, a by-product of tea processing, holds potential for creating flavor extracts suitable for herbal tea products. In contrast, the coarse stems' unfavorable aroma limits

		herbal tea products. Given the environmental and economic challenges, including climate change impacts on rooibos cultivation, the research sought to maximize the use of available plant biomass and reduce waste in the production process.	to commercial rooibos, albeit with slightly less intensity. However, infusions made from coarse stems exhibited a pronounced "planky/pencil shavings" aroma, which was considered undesirable. Attempts to mask this aroma through blending were unsuccessful. The flavonoid content and turbidity of the dust extracts were generally lower than those of commercial rooibos infusions	dust. Subsequently, sensory analyses were conducted to assess the flavor profiles, color, and flavonoid content of infusions made from both dust and stem materials. The study also examined the feasibility of blending these extracts to enhance sensory attributes	their direct use in tea blends. This research highlights an opportunity to reduce waste and add value within the rooibos industry by repurposing processing by-products, contributing to more sustainable production practices.
37	Yang, W., 2023. A Gratification Perspective of Why People Buy Herbal Tea and What do They Want from it: A	The study aimed to explore the motivations behind consumers' purchases of herbal tea and their	Health Benefits: Many consumers cited health-related reasons,	Employing the Uses and Gratifications Theory, the study conducted a qualitative content analysis of online reviews for	The study concluded that consumers purchase herbal tea not only for its health benefits but also for emotional and sensory

	<p>Content Analysis of Tea Products' Online Reviews.</p>	<p>expectations from these products. By analyzing online reviews, the research sought to understand the gratifications consumers seek when buying herbal tea.</p>	<p>such as aiding digestion, improving sleep, and boosting immunity.</p> <p>Stress Relief and Relaxation: A significant number of reviews mentioned using herbal tea as a means to unwind and reduce stress.</p> <p>Taste and Flavor: The sensory experience, including taste and aroma, was a common gratification sought by consumers.</p> <p>Natural and Organic Preferences: Consumers expressed a preference for natural ingredients and organic products, associating</p>	<p>herbal tea products. This approach allowed the researcher to categorize and interpret the various reasons consumers provided for their purchases and the benefits they anticipated.</p>	<p>gratifications. The findings suggest that marketers should highlight these aspects in their branding and product descriptions to align with consumer motivations.</p>
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			herbal tea with a healthier lifestyle.		
38	Suh Nchang, A., Njong, S., Noukimi, S.F., Shinyuy, L.M., Bambara, S., Kalimba, E.M., Kamga, J., Souopgui, J., Ghogomu, S.M., Frederich, M. and Talom, J.L.L., 2023. A cross-sectional survey on the use of herbal tea among Cameroonian adults (18–65 years). <i>BMC complementary medicine and therapies</i> , 23(1), p.285.	The study aimed to explore the prevalence and patterns of herbal tea use among Cameroonian adults aged 18–65 years. It also sought to identify the socio-demographic determinants influencing herbal tea consumption and assess the willingness of individuals to use herbal teas if prescribed in formal healthcare settings	The survey revealed that 89.3% of participants had consumed herbal teas within the two years preceding the study. The primary reasons for consumption included the prevention and treatment of COVID-19 (67.9%), malaria (59.7%), and typhoid fever (35%). Most respondents consumed the teas warm, adhering to a common dosage of one glass in the morning and evening for one to two weeks. Despite 70% reporting an unpleasant or bitter taste, 72%	A cross-sectional survey was conducted between January and April 2022 across four hospitals and four communities in the Centre and Southwest regions of Cameroon. A total of 307 adults were randomly selected and interviewed using semi-structured questionnaires. The data collected encompassed participants' herbal tea usage, reasons for consumption, sources of information, and attitudes toward integrating herbal teas into conventional healthcare. Binary logistic regression analysis was	The study highlights a high prevalence of herbal tea consumption among Cameroonian adults, driven primarily by perceived treatment effectiveness. The findings suggest a strong public openness to incorporating herbal teas into formal healthcare systems. However, the study also underscores the need for regulatory measures to ensure the safety, efficacy, and standardization of herbal teas prescribed in health facilities. The absence of significant socio-demographic predictors indicates a widespread acceptance of herbal teas

			completed their treatment courses. Furthermore, 90.5% expressed willingness to use herbal teas if prescribed in health facilities, and 90.1% supported the idea of integrating herbal teas into hospital prescriptions. no significant association was found between socio-demographic characteristics and herbal tea use.	employed to determine associations between socio-demographic factors and herbal tea use.	across diverse population segments.
39	Joy, A. and Li, E.P.H., 2012. Studying consumption behaviour through multiple lenses: an overview of consumer culture theory. <i>Journal of Business Anthropology</i> , 1(1), pp.141-173.	The article aims to provide a comprehensive overview of Consumer Culture Theory (CCT) by examining consumption behavior through various theoretical lenses. Joy and Li seek to elucidate	The authors identify that CCT encompasses diverse methodological approaches, including ethnography, phenomenology, and semiotics, to study consumption practices. They highlight how consumers	a multidisciplinary approach, drawing from anthropology, sociology, and marketing to explore the dimensions of CCT. They analyze existing literature and theoretical frameworks to dissect the components of CCT, focusing on four	CCT offers a rich, nuanced understanding of consumer behavior by acknowledging the cultural, social, and ideological factors influencing consumption. They advocate for continued interdisciplinary research to further unravel

		<p>how CCT integrates multiple perspectives to understand the complex interplay between consumers, cultural meanings, and marketplace dynamics.</p>	<p>actively construct identities through consumption, participate in sub-cultures and brand communities, and interpret marketplace ideologies. The study underscores the importance of understanding the sociohistorical context in which consumption occurs, as well as the symbolic meanings attached to consumer goods.</p>	<p>key research programs: consumer identity projects, marketplace cultures, the sociohistoric patterning of consumption, and mass-mediated marketplace ideologies and consumers' interpretive strategies</p>	<p>the complexities of consumer culture and suggest that marketers and scholars consider these multifaceted influences when analyzing consumer behavior.</p>
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Appendix 2

Perception and Awareness of Herbal Tea Consumption in Sweden: An Agroecological Approach to Sustainable Herbal Tea Consumer Behavior

* Indicates required question

Information on survey

Dear Participant,

You are invited to take part in a **master's thesis survey** conducted at the **Swedish University of Agricultural Sciences (SLU)**.

The aim of this study is to collect information on individuals' **perceptions and awareness regarding herbal tea consumption**. As herbal teas are increasingly associated with health benefits and natural well-being, understanding consumer attitudes is essential for both academic inquiry and future policy or industry insights.

Participation in this survey is **entirely voluntary**. All responses will be treated with strict confidentiality and used solely for academic research purposes. The study fully complies with the **General Data Protection Regulation (GDPR)**; your data will be handled securely and will not be shared with any third parties.

The survey will take approximately **10 minutes** to complete. There are no notable risks associated with participation. You may withdraw your consent and discontinue your participation at any time, without providing any explanation.

If you have any questions regarding this study, you may contact the researcher or the academic supervisor:

Researcher:

Chalani Nishaya, MSc Candidate, Swedish University of Agricultural Sciences (SLU), cini0001@stud.slu.se

Supervisor:

Dr. Filiz Malkoc (Kinikli), PostDoctor, Department of People and Society, Swedish University of Agricultural Sciences (SLU), filiz.kinikli@slu.se

Thank you very much for your time and valuable contribution to this research.

1. Consent to Participate *

I have read and understood the information provided above. I hereby fully and freely consent to participate in this study.

Mark only one oval.

Yes

No

Definition of herbal tea

Herbal teas are drinks made by steeping dried plants (leaves, seeds, roots) in hot water. They're used for various health reasons, like energy, relaxation, digestion, and immunity.

2. 1. How often do you drink herbal tea? *

Mark only one oval.

Daily

A few times a week

A few times a month

Rarely

Never (If selected, the survey will end. Thank you for your time.) *Skip to question 22*

Part A: Herbal Tea Consumption

3. **2. What types of herbal tea do you prefer?** (multiple choices allowed) *

Tick all that apply.



Chamomile



Mint



Lemon Verbena



Rooibos

Other: _____

4. **3. Where do you usually purchase herbal tea?** (multiple choices allowed) *

Tick all that apply.

Supermarkets

Specialty tea shops

Online stores

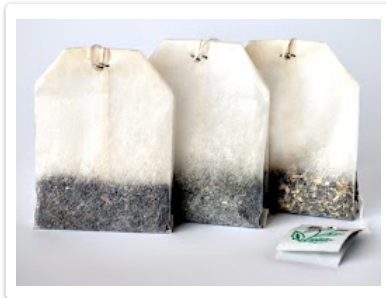
Farmers' markets

Pharmacies

Other: _____

5. 4. Which type of packaging do you prefer when purchasing herbal tea? (multiple choices allowed) *

Tick all that apply.



Tea bags (single-use sachets)



Loose-leaf



Komposterbar / miljövänlig förpackning



Individually wrapped bags



Pyramid tea bags

Other: _____

6. 5. How often do you read the labels on herbal tea products before purchasing? *

Mark only one oval.

- Always
- Often
- Sometimes
- Rarely
- Never

7. 6. How important are the following factors when choosing herbal tea for daily consumption? *

It is important to me that the herbal tea I drink on a typical day:

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral (Neither Agree nor Disagree)	Agree	Strongly Agree
Contains a lot of vitamins and minerals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keeps me healthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is good for my skin/teeth/hair/nails etc	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps me cope with stress/ Helps me relax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps me to cope with life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cheers me up/ Makes me feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is easy to prepare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is easily available in shops and supermarkets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smells nice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tastes good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contains no artificial ingredients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is not expensive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps me control my weight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is what I usually drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is like the tea I drunk when I was a child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Packaging looks nice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is package in an environmentally friendly way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look for environmentally friendly products when shopping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look for organic certification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider herbal tea as a part of my culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part B: Health Consciousness and Attitudes



8. 7. Which of the following statements best reflect your health involvement ? *

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral (Neither Agree nor Disagree)	Agree	Strongly agree
I regularly monitor my health status (e.g., weight, blood pressure, check-ups).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I actively seek out information related to health and wellness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I carefully consider health aspects when choosing food or beverages.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I read product labels to evaluate health-related information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I frequently talk about health topics with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I follow a specific health-related routine or diet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often use mobile apps or devices to track my health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I base my purchasing decisions on the health benefits of the product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consult professionals before using new health products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintaining good health is a priority in my daily life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. **8. How often do you read about health in newspapers, magazines, books, TV, Radio, social media, etc.?** *

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral (Neither Agree nor Disagree)	Agree	Strongly agree
I frequently seek out health-related information (e.g., online articles, books, research).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I follow health news and trends to stay informed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consult health professionals or credible sources when I have health concerns.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I regularly read or watch content about health in newspapers, magazines, books, TV, radio, or social media.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. **9. Which of these statements best describes your eating and/or cooking habits most of the time?** *

Mark only one oval.

- I have normally been eating/cooking homemade meals from scratch using fresh ingredients
- I have normally been eating/cooking meals using a combination of fresh ingredients and packets/jars of ingredients/sauces
- I have normally heated up ready meals in the oven/microwave oven (i.e. pizza, lasagne, frozen fish, chicken and veg)
- I have normally eaten
- Don't know
- Other:

11. 10. How often do you shop in health food shops*?

*

***Health food shop** is a type of [grocery store](#) that primarily sells [healthful foods](#), [organic foods](#), [local produce](#), and often [nutritional supplements](#).

Mark only one oval.

- Never
- Once a month or less
- 2-4 times a month
- Once a week
- 2-3 times a week
- 4 or more times a week
- Other: _____

Part C: Factors Influencing Herbal Tea Consumption

12. 11. What are the main barriers to your consumption of herbal tea? (Multiple choices allowed) *

Tick all that apply.

- Lack of availability in stores
- High price
- Limited knowledge of herbal teas (e.g., types, preparation, usage)
- Preference for other beverages (e.g., coffee, black tea, soft drinks)
- Don't believe herbal teas provide noticeable health benefits
- Uncertainty about ingredients/quality
- Potential interactions with medications
- Other: _____

Part D: Sustainability and Agroecological Practices

13. **12. How much more would you be willing to pay for herbal tea that..** *

Mark only one oval per row.

0% (I would not be willing to pay extra)	1-5%	6-10%	11-20%	21-30%	More than 30%	
... is produced using agroecological farming methods*? (*Agroecological methods refer to farming practices that avoid synthetic chemicals, protect biodiversity, and are environmentally friendly.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...comes in sustainable or environmentally friendly packaging*? (*Sustainable or environmentally friendly packaging refers to packaging that is recyclable, biodegradable, or made from natural materials that reduce environmental harm.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. **13. Are you aware of whether the herbal tea bags you consume are compostable or biodegradable?** *

Mark only one oval.

- Yes, I am aware and I choose compostable tea bags.
- Yes, I am aware, but I don't pay attention to that when purchasing.
- No, I am not aware.
- I don't use tea bags / I only consume loose-leaf herbal tea.
- I am not sure.

15. **14. How do you typically dispose of your herbal tea packaging and tea bags?** (multiple choices allowed) *

Tick all that apply.

- I recycle the packaging (e.g., paper, cardboard, plastic)
- I compost the tea bag
- I compost both the tea bag and the packaging
- I throw both the tea bag and the packaging in general waste
- I am not sure how to dispose of them
- Other: _____

16. 15. When purchasing herbal tea, how important are the following factors to you? *

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral (Neither Agree nor Disagree)	Agree	Strongly Agree
I prefer farms that focus on improving soil health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I value herbal tea products made using agroecological farming practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I support farms that promote and maintain local biodiversity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer herbal tea brands that use minimal or low-impact packaging. (Minimal packaging refers to packaging that uses fewer materials and generates less waste.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I actively look for information about the farming practices used to produce my herbal tea.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part E: Demographic Information

17. 16. Gender *

Mark only one oval.

- Male
- Female
- Non-binary/Other
- Prefer not to say

18. 17. Age *

19. **18. What is your highest level of education? ***

Mark only one oval.

- No education
- Primary education (Grundskola)
- Secondary education (Gymnasieskola)
- Vocational training
- Bachelor's degree
- Master's or higher level education
- Other (please indicate)

20. **19. Which city do you live in? ***

Mark only one oval.

- Stockholm
- Göteborg
- Malmö
- Other:

21. **20. Please indicate your household's average monthly income level (gross, before taxes) ***

Mark only one oval.

- Below 15,000 SEK
- 15,000 - 25,000 SEK
- 25,000 - 35,000 SEK
- 35,000 - 50,000 SEK
- 50,000 - 75,000 SEK
- 75,000 - 100,000 SEK
- Above 100,000 SEK

Thank you for your participation!

22. **If you would like to receive a summary of the survey results, you may leave your email address below.**

Providing your email is completely optional and will only be used for sending the results. Your contact information will be kept confidential and not shared with third parties.

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