

Honey consumption patterns: Habit or choice? A comparative study in the Visegrad region

Spotreba medu: Návyk alebo voľba? Komparatívna štúdia v regióne Vyšehradskej skupiny

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ABSTRACT

Honey has become more and more popular in the context of healthy lifestyle trends in the food market. The main objective of the paper is to identify profiles of honey consumers based on their consumption patterns (childhood as well as adulthood) in the Visegrad region. The study is based on primary research conducted in 2022 by implementing an online survey both in Slovakia (n = 1,532) and in Hungary (n = 1,178). Several segments were created by implementing a two-step cluster analysis based on honey consumption in childhood as well as on current honey consumption. Four similar segments were identified in both countries. Two segments indicated the same consumption patterns as in childhood, which reflects a certain degree of habit, while two segments indicated different patterns in consumption of honey between their childhood and current consumption, which reflects a certain degree of conscious choice. Moreover, clusters with regular consumption of honey tend to have both a healthy diet and a healthy lifestyle. The findings provide important information for beekeepers to understand patterns and reasons for honey consumption among their customers. Acquired knowledge will help to improve marketing strategies and marketing activities aimed at fostering both consumption and sales of honey directly to consumers.

Keywords: consumer clusters, consumer behaviour, consumption habits, honey

ABSTRAKT

Med získava čoraz väčšiu popularitu v kontexte trendov zdravého životného štýlu na trhu potravín. Hlavným cieľom príspevku je identifikovať profily spotrebiteľov medu na základe ich konzumácie v detstve i v dospelosti v regióne Vyšehradskej skupiny. Štúdia je založená na primárnom výskume realizovanom v roku 2022 prostredníctvom online prieskumu, ktorý bol uskutočnený na Slovensku (n = 1 532) a v Maďarsku (n = 1 178). Na základe analýzy vzorcov konzumácie medu v detstve a súčasnej spotreby boli vytvorené segmenty pomocou dvojkrokovej zhlukovej analýzy. V oboch krajinách boli identifikované štyri segmenty. Dva segmenty vykazovali podobné vzorce konzumácie medu ako v detstve, čo odráža určitý stupeň zvyku, zatiaľ čo dva ďalšie segmenty ukázali rozdielne vzorce konzumácie medzi detstvom a súčasnosťou, čo naznačuje vedomú voľbu. Ďalej sa zistilo, že zhluky pravidelných konzumentov medu majú tendenciu preferovať zdravú stravu a zdravý životný štýl. Uvedené zistenia poskytujú cenné informácie pre včelárov na pochopenie vzorcov a motívácie spotrebiteľov pri výbere medu, čo môže pomôcť zlepšiť marketingové stratégie a aktivity zamerané na podporu spotreby a predaja medu priamo spotrebiteľom.

Kľúčové slová: spotrebiteľské segmenty, spotrebiteľské správanie, spotrebiteľské návyky, med

INTRODUCTION

Consumer interest in a healthy lifestyle and the choice of healthy foods, and the consumption of natural products is constantly increasing, and thus the popularity of honey is growing (Ribeiro et al., 2019). Honey is considered a traditional food with high nutritional and functional value. However, honey consumption patterns vary across countries and population segments, with consumers differing in consumption frequency, preferred types of honey (floral, acacia, forest, etc.), use (sweetening, disease prevention, cosmetic purposes) and emphasis on the origin or quality of the product. These factors are often influenced by demographic and socio-economic characteristics of consumers, as well as their attitudes towards health and sustainability. For the future direction of the honey market development, it is essential to know consumer and purchasing behaviour and the determinants affecting honey consumption. Currently, consumer behaviour in the food market is changing with an emphasis on a healthy lifestyle and countries of the Visegrad region are no exception. Both Slovakia and Hungary belong to European countries with a higher annual consumption than the average consumption per European inhabitant, but a consumer study focused on the honey consumption regarding the determinants of consumption, as well as the consumer segmentation related to preferences and perceptions of factors affecting behaviour of honey consumption in the countries of the Visegrad region is lacking and thus can fill a gap in scientific research. On this background, the paper aims to examine honey consumption patterns and identify the main determinants of consumer behaviour in the honey market in the Visegrad countries, specifically Slovakia and Hungary, with a focus on factors that influence consumer behaviour and preferences.

THEORETICAL BACKGROUND

Honey as part of a healthy diet

Key determinants of the development of food markets are the growing interest of consumers in health, as well as the food environment that shapes their perceptions and

behaviour in food choices (Dominteanu et al., 2025). A healthy lifestyle is usually defined by a set of interrelated behavioural factors, such as non-smoking, moderate alcohol consumption, sufficient physical activity, adequate fruit and vegetable intake, and maintaining an optimal body weight (Lo et al., 2024). Trieste et al. (2021) add that a higher level of food literacy, influenced by consumer personality and psychometric factors, supports a healthy lifestyle through conscious food choices. Predanócyová et al. (2023) emphasise that health, healthy lifestyle and healthy eating are one of key determinants shaping the current food market, with consumers choosing foods that they believe will positively impact their health and help them maintain it. Honey, with its natural properties and nutritional benefits, is a significant part of the healthy diet of consumers across various generation cohorts (Iyiade Adetunji, 2020). Honey is a natural product that is not subject to transformation processes, and, in addition, it is an important source of nutritional elements that positively affect the health of consumers (Cucu et al., 2021). Honey is important food rich in components including proteins, enzymes, amino and organic acids, lipids, vitamins, minerals, flavour compounds and flavonoids and phenolic compounds, which are responsible for medicinal, therapeutic, dietary, and nutritional properties (Mazol et al., 2016). Honey is also consumed for the purpose of nutrition, health maintenance and rehabilitation as well as physical embellishment (Alvarez-Suarez et al., 2009). In connection with the health benefits of honey, Gündoğdu et al. (2019) state that honey has antioxidant, antimicrobial, antiviral, antiparasitic, anti-inflammatory, antimutagenic and anticancer effects.

Honey is increasingly used as a more beneficial alternative to sugar (Guziy et al., 2017), for direct consumption or as a spread (Pocol et al., 2018). For many consumers, honey can also be suitable for cooking or baking in various recipes (Güleç and Sarper, 2022). Kowalczyk et al. (2023) found that the most frequent way of consuming honey is its use in hot drinks, desserts, cakes, or spread on bread, or it is consumed directly. Despite the wide-spectrum use of honey as a health-friendly food, the consumption of honey is relatively low in some

regions (Kowalczyk et al., 2023). Palmieri et al. (2022) point to the relatively low annual consumption of honey in European countries, where it reached an average level of approximately 0.60 kg per capita in 2020. Countries with the highest average honey consumption per capita in Europe include Slovenia (1.60 kg), Greece (1.55 kg), Switzerland (1.41 kg), Austria (1.32 kg) and Ukraine (1.15 kg) (FAO, 2019). In the countries of the Visegrad region, Slovakia has the highest average annual consumption of honey per capita (1.10 kg) (FAO, 2019). Consistent with a healthy diet, the healthy benefits of honey and honey consumption, the first research question is as follows:

RQ1: Does a healthy lifestyle and diet influence the consumption frequency of honey?

Determinants affecting honey consumption patterns

The global honey market is constantly changing and adapting to current consumption trends in the context of consuming natural and unprocessed foods (Altmann et al., 2023) that have a positive impact on health. Recently, globalisation has significantly affected the honey market, and the volume of imported honey consumed by consumers is growing significantly (Borowska, 2016). However, the mentioned causes doubt about the quality of honey and the negative information about internationally produced honey and its adulteration is spread (Zhang et al., 2023). For this reason, the demand for regionally (locally) produced honey may be increased (Kallas et al., 2019). Honey consumption is determined by general factors of consumer behaviour, such as social, cultural, personal and psychological factors, as well as specific factors that differ between countries (Šedík et al., 2019; Kleisiari et al., 2022).

Socio-demographic characteristics have a significant influence on consumer behavior in the honey market (Popescu and Guresoiaie, 2019; Zanchini et al., 2022). The first key determinant is gender, and it has been identified that women tend to consume more honey than men (Pocol et al., 2018; Khaoula et al., 2019; Palmieri et al., 2022). However, the results of studies carried out by Kleisiari et al. (2022) showed that men consume more honey compared to women. Another demographic

factor determining the honey consumption is the age of consumers. Many studies have concluded that the annual honey consumption among the younger consumers is lower compared to the older generation of consumers (Khaoula et al., 2019; Kowalczyk et al., 2023). Roman et al. (2013) emphasise that key honey consumers are the elderly and children, due to the fact that honey is consumed primarily for its nutritional benefits. The size and structure of households can be considered another demographic factor (Vapa-Tankosić et al., 2020). Kleisiari et al. (2022) identified that households with children purchase honey more often and in more significant quantities.

Moreover, Ismaiel et al. (2014) found a negative correlation between household size and the amount of honey consumption, which means that honey consumption per household member decreases as household size increases. The next demographic aspect is the level of education, and it was proven that respondents with higher education consume more honey (Pocol and Bolboaca, 2013). Another determinant of honey consumption is income, and Ignjatijević et al. (2019) found that the amount of honey consumption increases with increasing income. Muhindo (2019) points out that the amount of honey consumed increases with the years of schooling, household income, and the healing nature of honey. On the other hand, the amount of honey consumed decreases significantly with household size. Honey consumption is determined by socioeconomic and demographic characteristics, and therefore, it is necessary to increase consumer awareness of the medicinal role of honey, as well as support household income-generating activities (Muhindo, 2019). Based on selected socio-demographic characteristics, Ávila Ramos et al. (2022) divided honey consumers into three groups. In the first group of honey consumers, there are educated consumers with an average income, who consume honey more often compared to other groups, and they have a higher awareness of honey and beekeeping. The second group of consumers is represented by highly educated consumers with high incomes, who are mature age consumers with moderate consumption of honey, and

they are aware of honey. The last group of consumers consists of educated consumers with low incomes, but a younger generation of consumers whose consumption of honey is only moderate.

In the context of honey consumption and consumer behaviour, psychological factors are also an important determinant. The motivational aspect that leads consumers to purchase and consume honey is a very significant psychological factor. Health reasons, medicinal and nutritional values, as well as the satisfaction of the taste (Ismaiel et al., 2014; Khaoula et al., 2019) are the key motives for honey consumption. Another factor is perception, and it concerns the perception of individual characteristic features of honey or its quality. Honey colour, taste, aroma, consistency, texture, and varieties are considered the most important sensory properties of honey (Szabó et al., 2016; Oravec and Kovács, 2019b; Ismaiel et al., 2014). Pocol et al. (2022) add that another indicator of honey quality is its crystallisation. However, the quality of honey can also be evaluated by consumers based on the floral source (Kaškonienė and Venskutonis, 2010), country of origin and location-landscape (Šánová et al., 2017). Domestic honey is perceived not only as high quality due to the reliability and proximity of local and regional producers, but also as beneficial to the development of the regional economy (Ribeiro et al., 2019). Consumers are becoming increasingly aware of the impact of food on their health and are therefore beginning to prefer food produced in organic farming, and organic honey is perceived by consumers as safe, with the support of the local community (Vapa-Tankosić et al., 2020).

The quality of honey can also be judged based on various marketing aspects related to honey. Consumers often associate a higher quality of honey with a higher price of honey (Völkner and Hofmann, 2007). Another marketing factor is information available on the product's label, as well as the brand's reputation (Ribeira et al., 2019). In this context, consumers prefer to buy honey directly from producers, where consumers perceive

the purchased honey as high-quality, natural and pure (Nascimento et al., 2022). Another dimension related to the quality of honey is the perception of the packaging. Glass packaging of honey was perceived as healthier, tastier, of better quality and trustworthy. In addition, this type of packaging is considered practical and sustainable by consumers (Nascimento et al., 2022). Gulevska and Martinovski (2018) add that the perceived quality of honey can also be determined by increasing consumer awareness of honey's nutritional properties and health benefits through the application of nutritional marketing and appropriate marketing strategies. Moreover, Sparacino et al. (2022) identified four different types of consumers based on preferences and perceptions of the properties and quality of honey, namely healthy people, sustainable people, organic people and quality-sensitive people. The second research question is related to the impact of choice or habit on the consumption patterns of honey. However, previous studies that specifically focused on habit or choice in honey consumption were not examined.

RQ2: Is honey consumption a habit or a choice?

Conceptual model

Figure 1 illustrates the conceptual model, anticipating that current honey consumption in adulthood is influenced by the individual's honey consumption during childhood. Additionally, it assumes that a healthy lifestyle, a healthy diet, and the nutritional values associated with honey have a significant influence on consumers and their consumption of honey.

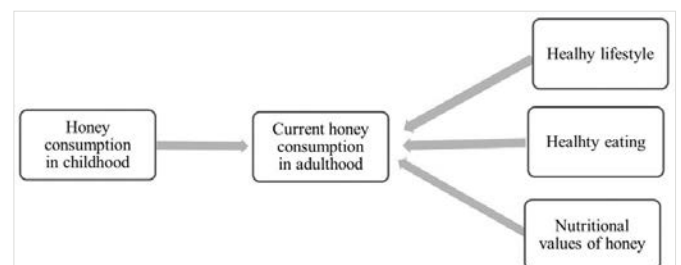


Figure 1. Conceptual model (Source: own processing, 2024)

MATERIALS AND METHODS

Data collection and research design

Research is based on primary data, which were acquired by implementing online questionnaire surveys in Slovakia and Hungary from February to October 2022. Questionnaires were distributed via social media, emails and in cooperation with beekeepers. The inclusive criteria were as follows: positive honey consumption both in

childhood and nowadays, age 18 years and higher, as well as residence in Slovakia and Hungary. Research samples in both countries are representative based on gender and representative based on generation in Hungary. In total, 1,532 honey consumers participated in the Slovak sample and 1,178 honey consumers in the Hungarian research sample. The socio-demographic profiles of both samples are shown in Table 1.

Table 1. Demographic profiles of both research samples

Demographic variables		Slovakia	Hungary
Gender	female	51.44%	51.19%
	male	48.56%	48.81%
Generation	babyboomers	10.18%	23.68%
	generation X	27.09%	34.47%
	generation Y	37.40%	29.54%
	generation Z	25.33%	12.31%
Education	primary	1.57%	1.27%
	secondary	49.87%	56.88%
	university	48.56%	41.85%
Place of residence	rural	37.73%	30.14%
	urban	62.27%	69.86%
Economic activity	employed	55.10%	56.88%
	maternity leave	4.37%	2.63%
	own business	14.75%	15.62%
	retired	7.11%	10.78%
	student	16.39%	13.07%
	unemployed	2.28%	1.02%
Personal income in netto	up to 400 €	15.67%	16.21%
	401 - 800 €	23.43%	36.84%
	801 - 1,500 €	40.60%	35.32%
	more than 1,500 €	20.30%	11.63%

Source: own processing (2025)

The questionnaire survey included closed questions, both dichotomous and multiple-choice, with a single answer. The questionnaire survey comprised questions regarding respondents' consumption patterns, such as consumption frequency, amount of consumption per year, way of consumption, period of consumption and selected questions regarding honey properties and consumer lifestyle and diet. The last section was devoted to socio-demographic questions. The questions used in this study were based on previous research on consumer behaviour in the honey market conducted by Šedík et al. (2019) and were subsequently adapted to the objectives and context of the current research

Statistical analysis

The two-step cluster analyses were conducted in order to identify existing clusters both in Slovakia and Hungary. Honey consumption frequency in childhood and current consumption frequency of honey in adulthood were used as the main variables for segmentation. The two-step cluster analysis was implemented in a previous comparative study aimed at exploring consumer behaviour in the honey market in Slovakia and Romania. According to it (Šedík et al., 2019) „The method is based on a probabilistic model and the cases are clustered according to likelihood distance measure (similarity criterion). The cases are allocated to pre-clusters in the way that maximises a long-likelihood function. Afterwards, pre-clusters are grouped into a range of solutions by using a standard agglomerative clustering algorithm followed by the reduction of solutions to the best number of clusters based on Akaike information criterion or Bayes information criterion (BIC). Log likelihood option as well as Bayes information criterion were used to determine the number of clusters for both countries. Questions regarding frequency of consumption (in childhood and in adulthood) were used as dependent variables in the first phase of clustering, followed by independent variables in the second phase. The independent variables (cluster descriptors) such as questions regarding demography

and consumption patterns, were implemented to create deeper profiles of acquired clusters. In order to test statistically significant differences among clusters, the Pearson χ^2 -test was implemented. Two-step cluster analysis determines the number of clusters automatically within large data sets while both continuous and categorical variables can be used (Petrovčič et al., 2017). Furthermore, Multiple correspondence analysis (MCA) was carried out to study differences among segments and dichotomic questions (yes/no) regarding healthy lifestyle, healthy diet, as well as honey consumption due to its nutritional value. MCA is applied to analyse the interrelationships among many categorical variables (Ganiere et al., 2006) and implemented on data acquired by a quantitative consumer survey (An and Alarcón, 2021). MCA is widely implemented in marketing research as an exploratory instrument for investigating non-causal relationships among categorical variables, which are graphically illustrated by a two-dimensional space called a Biplot. The Biplots easily visualise the relationship among variables (Kamalja and Khangar 2017; Šedík et al., 2023). All statistical analyses were carried out using statistical software IBM SPSS Statistics Grad Pack 28.0.

RESULTS

Acquired segments were provided by a two-step cluster analysis based on both honey consumptions in childhood and current honey consumption in adulthood. Four clusters were identified in both countries (Table 2). Two segments indicated the same consumption patterns as in childhood, which reflects a certain degree of habit, while two segments indicated different patterns in consumption of honey between their childhood and current consumption, which reflects a certain degree of choice. The silhouette measure of cohesion and separation obtained for both countries is 1, which indicates a good cluster quality. The predictors' importance of both above-mentioned inputs was 1. Furthermore, clusters have shown significant differences in selected variables regarding demographic profile and consumption patterns.

Table 2. Acquired clusters

Segments in Slovakia		Cluster 1 (18.28%)	Cluster 2 (37.73%)	Cluster 3 (21.87%)	Cluster 4 (22.13%)
Honey consumption in adulthood	regular	0.00%	100.00%	100.00%	0.00%
	irregular	100.00%	0.00%	0.00%	100.00%
Honey consumption in childhood	regular	100.00%	100.00%	0.00%	0.00%
	irregular	0.00%	0.00%	100.00%	100.00%
Segments in Hungary		Cluster 1 (36.42%)	Cluster 2 (24.62%)	Cluster 3 (17.32%)	Cluster 4 (21.65%)
Honey consumption in adulthood	regular	0.00%	100.00%	0.00%	100.00%
	irregular	100.00%	0.00%	100.00%	0.00%
Honey consumption in childhood	regular	0.00%	100.00%	100.00%	0.00%
	irregular	100.00%	0.00%	0.00%	100.00%

Source: own processing (2025)

Profiling of segments in Slovakia

The first cluster (n = 280) represents consumers who currently consume honey on an irregular basis, but their consumption was regular in childhood. The change in consumer behaviour may be influenced by the fact that individuals in this segment do not consume honey primarily for its nutritional value. This segment is characterised by men, members of Generation Y, employed consumers, and a monthly income in the range of 801 to 1,500 Euros (Table 3). Most consumers in this segment consume honey several times a month or occasionally, and their total annual consumption is relatively low. Consumers in this segment tend to use honey throughout the year, with a higher frequency during the winter period and in times of illness. Honey is commonly used as a sweetener in beverages or as a spread in the morning or evening. In terms of consumer awareness, consumers in this segment are aware that heating honey can eliminate its biological properties, and they recognise crystallisation as a sign of its quality.

The second cluster (n = 578) includes consumers who consume honey regularly and have developed a habit of honey consumption since childhood, which can be justified by consumers' strong preference for a

healthy lifestyle and a healthy diet. Consumers from the mentioned segment mainly include women, consumers of Generation Y, employed with a monthly income from 801 to 1,500 Euros. Annual consumption of consumers is at a medium to high level, and consumers consume honey regularly, daily, or several times a week, indicating a high preference for consumption in the morning. They consume honey throughout the year and use honey to sweeten drinks, as a spread or consume it directly by spoon from a jar. Consumers state a high level of awareness regarding crystallisation as a sign of honey quality and the loss of biological properties of honey by heating it.

The third cluster (n = 335) comprises consumers who currently consume honey regularly, but during childhood, their honey consumption was only occasional. This behaviour change reflects a decision by consumers to include honey in their diets in adulthood, driven by an awareness of its nutritional value (Figure 2). Consumers in this segment are primarily women, consumers of Generation X and employed consumers with an income ranging from 801 to 1,500 Euros. They regularly consume honey every day or several times a week, with a medium to high level of consumption.

Table 3. Socio-demographic profile of Slovak clusters

Demographic variables		Cluster 1	Cluster 2	Cluster 3	Cluster 4	P - value
Gender	Female	40.00%	53.11%	60.90%	48.67%	<.001*
	Male	60.00%	46.89%	39.10%	51.33%	
Generation	babyboomers	3.92%	9.86%	20.60%	5.60%	<.001*
	generation X	19.29%	31.14%	34.33%	19.47%	
	generation Y	42.50%	37.37%	32.24%	38.35%	
	generation Z	34.29%	21.63%	12.83%	36.58%	
Education	Primary	1.07%	1.21%	2.09%	2.06%	0.600
	secondary	47.14%	49.48%	52.84%	49.85%	
	university	51.79%	49.31%	45.07%	48.08%	
Place of residence	Rural	36.43%	35.99%	40.30%	39.23%	0.529
	Urban	63.57%	64.01%	59.70%	60.77%	
Economic activity	employed	54.29%	54.32%	58.50%	53.69%	<.001*
	maternity leave	4.64%	3.63%	4.48%	5.31%	
	own business	15.36%	18.17%	12.54%	10.62%	
	Retired	3.21%	6.92%	13.73%	4.13%	
	Student	20.00%	15.40%	8.06%	23.30%	
	unemployed	2.50%	1.56%	2.69%	2.95%	
Personal income in netto	up to 400 €	20.01%	12.46%	10.45%	22.72%	<.001*
	401 - 800 €	15.71%	23.52%	30.75%	22.42%	
	801 - 1,500 €	39.64%	40.66%	43.28%	38.64%	
	more than 1,500 €	24.64%	23.36%	15.52%	16.22%	

Source: own processing, 2025 (Note: *Indicates significant differences between clusters, the Pearson χ^2 -test, $P < 0.05$)

Their honey consumption persists throughout the year, with a high consumption preference in the morning. They use honey to sweeten drinks or consume it directly. Similar to previous segments, these consumers also have knowledge about the crystallisation of honey and the loss of its biological properties through heating.

The last segment ($n = 339$) includes consumers who currently consume honey only irregularly, but even their consumption was occasional in childhood. They are consumers who have a long-term habit of low honey consumption and do not include honey in a healthy diet, nor do not consume it because of its nutritional

benefits. The segment mainly includes men, Generation Y consumers, employed with an income from 801 to 1,500 Euros. The consumption of honey by these consumers is at a very low level, with occasional consumption, only a few times a year. Consumers prefer to consume honey during the winter season and Christmas, or during illness.

Honey is most often used to sweeten drinks in the evening or when consumers want something sweet. Consumers showed a relatively good awareness of the crystallisation of honey as a sign of quality and the reduction of biological properties by heating honey (Table 4).

Table 4. Consumption patterns of honey consumers in Slovakia

Questions		Cluster 1	Cluster 2	Cluster 3	Cluster 4	P - value
Consumption frequency	every day	0.36%	28.55%	42.08%	0.29%	<.001*
	few times per month	58.57%	20.76%	14.93%	39.53%	
	few times per week	7.14%	49.13%	40.60%	7.67%	
	occasionally	33.93%	1.56%	2.39%	52.51%	
Annual consumption	high	3.57%	25.78%	32.54%	4.13%	<.001*
	medium	32.86%	53.46%	51.04%	22.12%	
	low	42.50%	18.17%	14.33%	36.87%	
	very low	21.07%	2.60%	2.09%	36.88%	
Way of consumption	cooking and baking	8.93%	4.33%	4.18%	12.39%	<.001*
	direct consumption	16.79%	22.32%	23.58%	16.52%	
	other	2.50%	8.30%	6.27%	2.95%	
	spreads and pouring	28.21%	23.18%	14.93%	19.47%	
	sweetening beverages	43.57%	41.87%	51.04%	48.67%	
Consumption during day	afternoon	11.43%	7.09%	7.76%	18.88%	<.001*
	evening	25.00%	14.71%	13.73%	26.85%	
	every time I want something sweet	22.50%	23.01%	19.10%	26.25%	
	morning	32.50%	43.43%	47.17%	20.94%	
	time between morning and lunch	8.57%	11.76%	12.24%	7.08%	
Consumption during year (<i>multiple answers</i>)	whole year	41.43%	71.28%	72.84%	23.89%	<.001*
	spring	10.36%	6.57%	6.57%	7.37%	
	summer	0.71%	0.87%	0.30%	0.59%	
	autumn	31.43%	15.05%	14.33%	37.76%	
	winter and Christmas	57.86%	27.85%	26.87%	74.63%	
Honey as sweetener	I do not sweeten with honey	13.21%	5.88%	8.66%	14.45%	<.001*
	no, I do not care	6.07%	3.63%	1.49%	8.26%	
	yes, always	11.79%	31.31%	31.94%	6.49%	
	yes, but only sometimes	68.93%	59.18%	57.91%	70.80%	
Regular consumption in tea/coffee	no	57.50%	31.31%	33.43%	66.96%	<.001*
	yes	42.50%	68.69%	66.57%	33.04%	
Honey crystallisation is the sign of quality	no	29.29%	19.55%	15.22%	26.84%	<.001*
	yes	70.71%	80.45%	84.78%	73.16%	
Heating decreases its biological properties	no	33.21%	35.12%	25.67%	36.58%	0.01*
	yes	66.79%	64.88%	74.33%	63.42%	
Consumption only during illness	no	93.93%	97.92%	98.21%	87.02%	<.001*
	yes	6.07%	2.08%	1.79%	12.98%	

Source: own processing, 2025 (Note: *Indicates significant differences between clusters, the Pearson χ^2 -test, $P < 0.05$)

The results of MCA showed (Figure 2) that cluster 1 and cluster 3 tend not to consume honey due to its rich nutritional values, as well as they consider both their eating habits and lifestyle as not healthy, while cluster 2 and cluster 3 consider having a healthy diet and a healthy lifestyle. Moreover, clusters with changes in honey consumption between childhood and adulthood may be related to their choices for lifestyle and diet. Members in cluster 1 changed their regular consumption to irregular, considering themselves as not having a healthy diet or lifestyle, while cluster 3 positively changed their consumption, and the members inclined towards eating honey due to its nutritional values, as well as a healthy lifestyle and diet.

Profiling of segments in Hungary

The first cluster (n = 429) consists of consumers whose current consumption is on an irregular basis and follows only occasional consumption from childhood. The above

represents a strong habit and unchanging consumer behaviour of Hungarian consumers who do not prefer the consumption of honey due to its nutritional values (Figure 3). Segment mainly involves Generation X and Generation Y, consumers with secondary education, and urban consumers (Table 5). Consumers from the mentioned segment show a low annual consumption of honey, while their consumption is irregular and occasional, only a few times a month or even a year. Consumers consume honey especially in winter and during Christmas, and prefer to consume it in the evening and use honey as a sweetener in drinks. Consumers do not have sufficient knowledge about honey, its crystallisation and the loss of biological properties by heating. More than 40% consume honey only during illness.

The second cluster (n = 290) comprises consumers whose current honey consumption is regular, mirroring their regular honey consumption during childhood. This

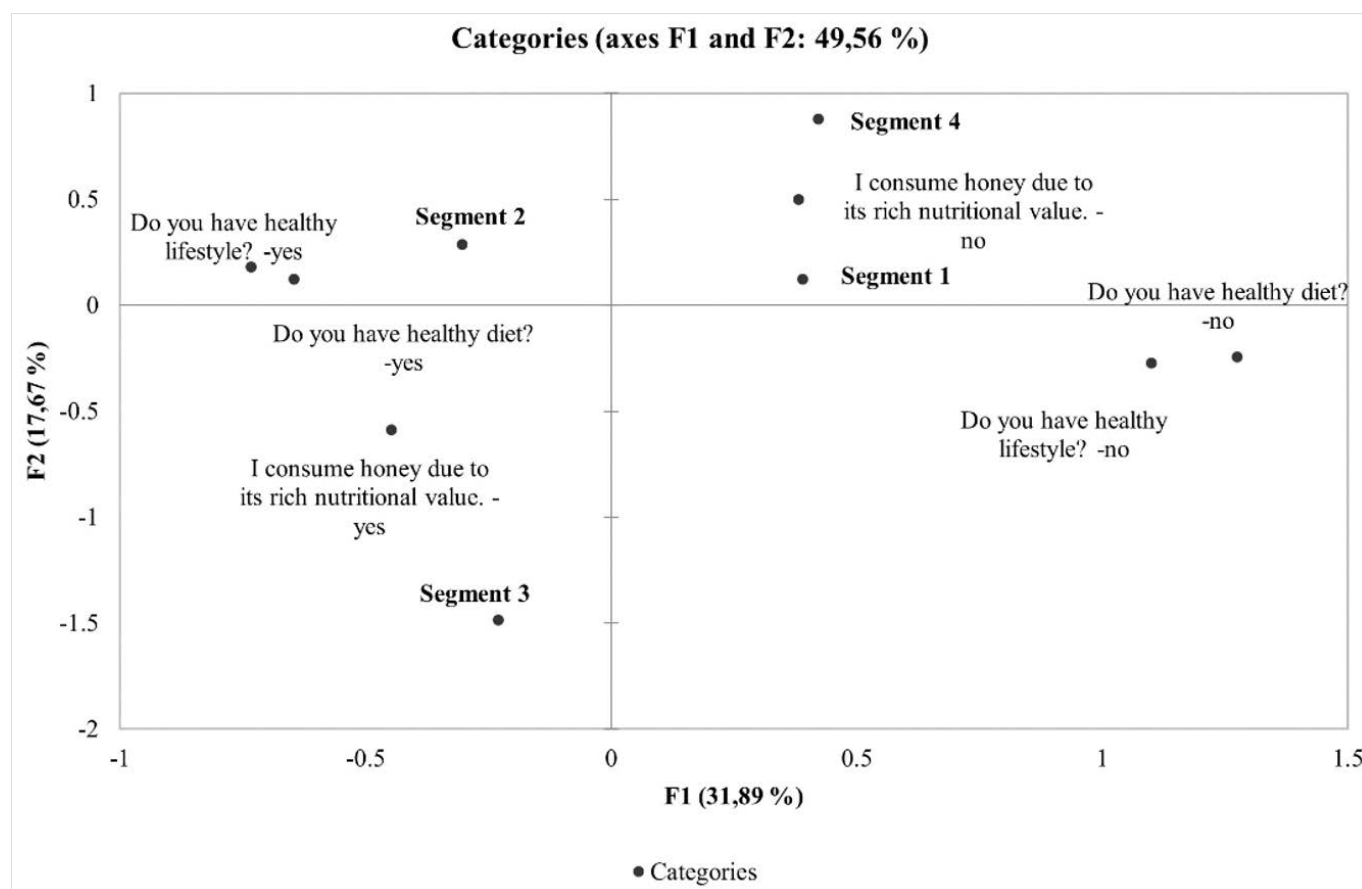


Figure 2. Multiple correspondence analysis (MCA) illustrating two dimensions created using Slovak segments and selected questions regarding healthy lifestyle, diet and nutritional values

consistency indicates a strong habit and unchanged consumer behaviour, which may also be associated with a tendency towards a healthy lifestyle and diet (see Figure 3). This segment predominantly consists of Generation X, consumers with secondary education, and urban consumers. Honey consumption within this segment is at a medium to high level and is regular, either daily or several times a week. Consumers prefer to consume honey throughout the whole year, particularly in the morning and use honey to sweeten drinks or as a spread. However, there is a notable lack of awareness

among consumers regarding honey crystallisation and its biological properties. Only about half of the consumers are aware that crystallisation is a sign of quality, and there is limited knowledge that heating of honey decreases its biological properties. The third cluster (n = 204) is represented by consumers whose current honey consumption is irregular, despite having had a regular honey consumption in childhood. The shift in consumer behaviour is associated with individual choices and no preference for a healthy lifestyle and diet (Figure 3).

Table 5. Socio-demographic profile of Hungarian clusters

Demographic variables		Cluster 1	Cluster 2	Cluster 3	Cluster 4	P - value
Gender	Female	54.78%	50.34%	46.57%	49.80%	0.237
	Male	45.22%	49.66%	53.43%	50.20%	
Generation	babyboomers	23.08%	22.76%	30.88%	20.00%	<.001*
	generation Y	28.90%	31.37%	26.47%	30.98%	
	generation X	30.07%	37.59%	26.96%	44.31%	
	generation Z	17.95%	8.28%	15.69%	4.71%	
Education	Primary	1.40%	0.69%	3.43%	0.00%	<.001*
	secondary	61.54%	51.72%	63.73%	49.41%	
	university	37.06%	47.59%	32.84%	50.59%	
Place of residence	Rural	25.64%	30.69%	26.47%	40.00%	<.001*
	Urban	74.36%	69.31%	73.53%	60.00%	
Economic activity	employed	54.31%	56.21%	58.33%	60.78%	<.001*
	maternity leave	1.63%	3.79%	1.47%	3.92%	
	own business	15.62%	18.28%	12.75%	14.90%	
	Retired	9.56%	10.69%	9.31%	14.13%	
	Student	17.95%	9.31%	17.16%	5.88%	
	unemployed	0.93%	1.72%	0.98%	0.39%	
Personal income in netto	up to 400 €	17.25%	16.21%	15.20%	15.29%	0.690
	401 - 800 €	38.93%	33.10%	37.75%	36.86%	
	801 - 1,500 €	32.86%	37.24%	38.23%	34.91%	
	more than 1,500 €	10.96%	13.45%	8.82%	12.94%	

Source: own processing, 2025 (Note: *Indicates significant differences between clusters, the Pearson χ^2 -test, $P < 0.05$).

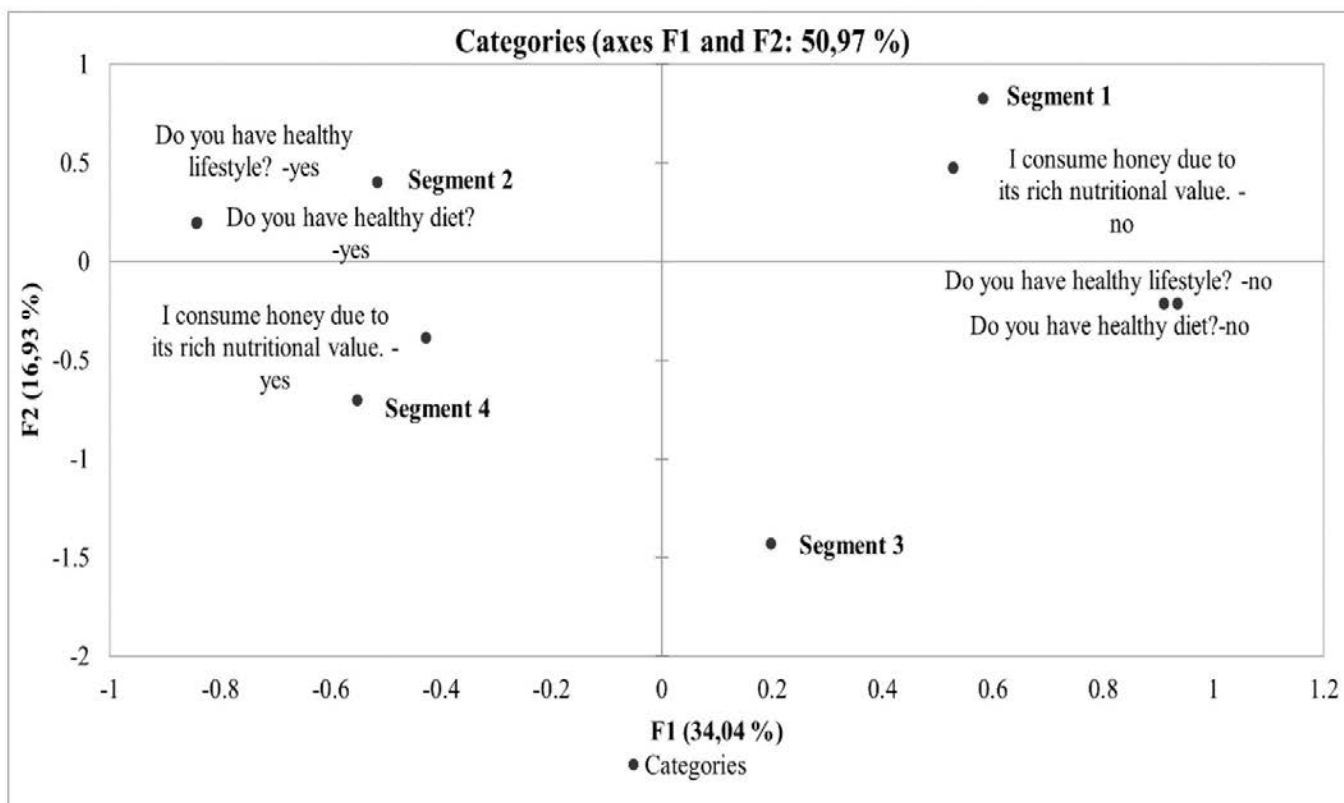


Figure 3. Multiple correspondence analysis (MCA) illustrating two dimensions created using Hungarian segments and selected questions regarding healthy lifestyle, diet and nutritional values

This segment is primarily characterised by men, Baby Boomers, urban consumers with secondary education, and employed. The consumption of honey in this segment is at a relatively low level, and the frequency is occasional, several times a month or several times a year. Consumers tend to use honey particularly during winter and Christmas, preferring morning and evening consumption, often as a sweetener or spread. Moreover, this segment is not sufficiently aware of the biological properties of honey or the crystallisation process as an indicator of quality.

The last cluster (n = 255) comprises consumers whose current honey consumption is regular, contrasting with their occasional consumption in childhood. This shift in dietary habits may be associated with a choice to increase honey consumption, driven by an awareness of its nutritional value. The segment mainly consists of Generation X, consumers with higher education, and urban consumers who are employed. Honey consumption is at a relatively high level, while in terms of frequency of consumption, consumers prefer daily consumption or

consumption several times a week. Consumers consume honey throughout the year, especially in the evening, and most often use honey as a sweetener. Consumers from this segment show the highest consumer awareness about the loss of biological properties by heating honey. However, only about half of consumers are aware of crystallisation as a sign of honey quality (Table 6).

The results of MCA in Hungary showed (Figure 3) a similar situation as in the case of Slovakia. Clusters 2 and 4, both with regular consumption of honey, tend to eat honey due to its rich nutritional values, as well as consider having a healthy lifestyle and diet. On the contrary, clusters 1 and 3 inclined in the opposite direction (not having a healthy lifestyle and diet). In addition, clusters with changes in consumption frequency between childhood and adulthood were impacted by their lifestyle. Members of cluster 4 positively changed their consumption frequency, considering having a healthy lifestyle and diet, while members of cluster 3 considered their lifestyle and diet to be unhealthy and negatively changed their consumption frequency.

Table 6. Consumption patterns of honey consumers in Hungary

Questions		Cluster 1	Cluster 2	Cluster 3	Cluster 4	P - value
Consumption frequency	every day	0.23%	26.90%	0.98%	40.39%	<.001*
	few times per month	32.63%	22.76%	50.49%	13.33%	
	few times per week	4.43%	47.93%	5.39%	42.75%	
	occasionally	62.71%	2.41%	43.14%	3.53%	
Annual consumption	high	1.63%	32.76%	2.94%	42.75%	<.001*
	medium	21.21%	44.14%	29.90%	41.96%	
	low	36.60%	19.66%	36.77%	12.94%	
	very low	40.56%	3.44%	30.39%	2.35%	
Way of consumption	cooking and baking	14.22%	4.83%	10.78%	5.88%	<.001*
	direct consumption	19.11%	17.59%	22.06%	17.25%	
	other	1.17%	4.14%	1.47%	3.92%	
	spreads and pouring	13.05%	24.48%	25.49%	12.94%	
	sweetening beverages	52.45%	48.97%	40.20%	60.01%	
Consumption during day	afternoon	15.15%	10.34%	15.20%	9.41%	<.001*
	evening	33.57%	23.10%	31.37%	19.22%	
	every time I want something sweet	16.32%	10.69%	18.63%	11.76%	
	morning	23.08%	45.53%	26.96%	52.55%	
	time between morning and lunch	11.88%	10.34%	7.84%	7.06%	
Consumption during year (<i>multiple answers</i>)	whole year	24.01%	74.48%	31.86%	73.73%	<.001*
	spring	6.99%	6.90%	11.76%	7.45%	
	summer	1.40%	1.38%	1.96%	1.57%	
	autumn	39.16%	17.93%	43.63%	18.04%	
	winter and Christmas	74.13%	25.86%	66.67%	25.10%	
Honey as sweetener	I do not sweeten with honey	20,98%	7,59%	13,73%	9,80%	<.001*
	no, I do not care	10,26%	3,44%	8,33%	3,53%	
	yes, always	7,45%	37,59%	11,27%	38,04%	
	yes, but only sometimes	61,31%	51,38%	66,67%	48,63%	
Regular consumption in tea/coffee	no	59.67%	15.17%	41.67%	14.51%	<.001*
	yes	40.33%	84.83%	58.33%	85.49%	
Honey crystallisation is the sign of quality	no	55.94%	47.93%	57.84%	49.80%	0.049*
	yes	44.06%	52.07%	42.16%	50.20%	
Heating decreases its biological properties	no	58.04%	50.69%	54.90%	32.94%	<.001*
	yes	41.96%	49.31%	45.10%	67.06%	
Consumption only during illness	no	58.51%	93.45%	73.53%	96.47%	<.001*
	yes	41.49%	6.55%	26.47%	3.53%	

Source: own processing, 2025 (Note: *Indicates significant differences between clusters, the Pearson χ^2 -test, $P < 0.05$)

DISCUSSION

The present consumer study investigates honey consumption patterns as habitual behaviour or conscious choice in relation to an executed healthy lifestyle and diet. Honey consumption can be extremely versatile - consumers can use honey in a variety of ways: as a sweetener in drinks, as a breakfast food, as an ingredient in various culinary preparations, for cosmetic or therapeutic purposes (Kleisiari et al., 2022; Oravec and Kovács, 2019a). Moreover, Šedík et al. (2025) pointed out generational differences, with older people preferring local and quality products and younger people preferring visual and innovative marketing solutions. When honey consumption is included in the daily routine, it becomes a habit (Kleisiari et al., 2022; Kowalczyk et al., 2023). The insufficient comprehension of habits associated with honey consumption was mentioned by Khaoula et al. (2019), by Ványi et al. (2011) and by Kowalczyk et al. (2023). The absence of precise knowledge about honey consumption behaviour will lead to the inability to establish an efficient and proactive marketing strategy (Kabakci and Dodoloğlu, 2021). Honey consumption could represent a mindful choice for adopting healthier eating habits (Ignjatijević et al., 2019; Pocol and Bolboaca, 2013; Šedík et al., 2019; Kleisiari et al., 2022). Consumers who prioritise a healthy lifestyle and are conscious of their overall well-being and nutrition may choose honey as a healthier alternative to sugar or to other artificial sweeteners (Singh et al., 2020). The nutritional profile of honey is also in accordance with the principles of a healthy diet (Zanchini et al., 2022). Based on these elements, the relationship between honey consumption and a healthy lifestyle is symbiotic. In light of the above-mentioned studies, the choice of the two research questions of our study is fully justified.

We utilised two-step cluster analysis to identify specific clusters in both Slovakia and Hungary, resulting in the identification of four clusters in each country. The results of this analysis enable us to confirm the existence of specific segments, both in Slovakia and Hungary. The first cluster, identified in both countries, comprises consumers

who presently have sporadic honey consumption patterns. In Slovakia, this cluster demonstrates awareness of honey properties, but the irregular consumption is determined mostly by the cold season and illnesses. The consumers belonging to this cluster recognise crystallisation as a sign of its quality. In Hungary, the cluster of sporadic consumers has a preference for the nutritional values of honey, but the consumption also occurs sporadically, mainly during winter.

The cluster of irregular consumption was also identified in previous studies conducted in Slovakia and Romania (Šedík et al., 2019). This cluster was also characterised by sporadic consumption during the winter season, both in Romania and Slovakia. Contrary to the results of our study, honey adulteration is largely unknown among sporadic consumers in Romania.

The second segment of Slovak consumers is characterised by regular honey consumption since childhood and a strong preference for a healthy lifestyle and diet. They consume honey regularly throughout the year, but they are characterised by a lack of awareness regarding honey crystallisation and its biological properties. In Hungary, the second segment of consumers reflects a consistent, regular honey consumption since childhood, indicating a strong habit associated with a tendency towards a healthy lifestyle. This segment is also characterised by a lack of awareness about honey crystallisation and its biological properties. Cluster analysis in the Czech Republic among honey consumers (Šánová et al., 2017) indicates opposite results: a significant factor influencing honey purchase is its crystallisation status. Despite not impacting objective quality parameters, crystallisation affects consumers' subjective perception of honey quality at the time of purchase (Šánová et al., 2017).

In Slovakia, the third segment includes consumers who shifted from occasional to regular honey consumption in adulthood, led by an awareness of its nutritional value. In Hungary, the third segment represents consumers who irregularly consume honey, with a shift in behaviour not linked to a preference for a healthy lifestyle. Their honey consumption is relatively low, lacking awareness

of its biological properties and crystallisation as a quality indicator. The shift in behaviour from an irregular consumer to a regular one could be influenced by awareness of the health benefits of honey, recognition of its nutritional value, and changes in dietary preferences. Other factors may include marketing and advertising, the education (Pocol and Bolboaca, 2013) the influence of social trends (Ribeiro et al., 2019; Mata and Dos-Santos, 2023), increased incomes, and the availability and accessibility of honey in the market.

In Slovakia, the fourth segment is characterised by very low honey consumption, occurring only occasionally during winter and Christmas, but they show good awareness of honey properties. In Hungary, the consumers of the fourth segment have a relatively high honey consumption, preferring daily or weekly intake, with heightened awareness of the loss of biological properties through heating, but limited awareness of crystallisation as a quality indicator. Despite changes in honey consumption, education campaigns are still needed (Sparacino et al., 2022). Whether honey consumption is a habit or a choice, consumers need to acquire knowledge about the nutritional value of honey, its properties, and crystallisation as a quality indicator. One of the main problems in the honey market today is adulteration. Understanding the difference between authentic and counterfeit honey is crucial. To fully benefit from its naturalness and healing properties, honey should be produced and marketed correctly. Our findings align with the literature, which notes a lack of knowledge and education, particularly in emerging economies, regarding honey consumption (Pocol and Bolboaca, 2013).

CONCLUSION

From a theoretical standpoint, our study contributes to the literature by integrating childhood experiences with the evolution of honey consumption into adulthood. To our knowledge, this is the first research to consider a healthy lifestyle, healthy eating, and the nutritional value of honey as factors influencing the transition from irregular to regular honey consumption.

Research study provides in-depth analysis regarding the consumption patterns of honey, including consumption frequency, annual consumption, way of consumption, period of consumption, etc. Unique consumer profiles based on honey consumption patterns, either habitual behaviour or conscious choice in relation to executed healthy lifestyle and diet, extend existing knowledge about honey consumers, which allows beekeepers to better understand their customers and their consumption habits. The consumer study provides information that can be used in the creation of a marketing strategy for beekeepers in the countries of the Visegrad region, as well as in the application of marketing tools necessary for communication with consumers. Moreover, research findings provide valuable data for consumer-oriented strategies aimed at both increasing the consumption of honey as well as forming new potential consumers among the young generation. Producers and marketers can use the results of the study to create marketing campaigns and tailor them to individual consumer segments, while they can appeal to the younger generation with innovative products and to older consumers with an emphasis on traditional and high-quality honey. Producers and marketers can also use information about the health benefits, origin and quality of honey to strengthen consumer trust, increase sales and effectively plan production, distribution and seasonal marketing campaigns.

The main limitation of the present study naturally involves the application of consumers' self-declared opinions regarding their healthy lifestyle and diet. Future research might investigate consumption patterns of honey, extended by more detailed dietary habits and psychometric scales.

In conclusion, the study revealed in both countries four segments, where two of them indicated their habitual consumption of honey from their childhood, while the other half indicated changed consumption patterns. Moreover, positive change towards regular honey consumption is associated with a healthy lifestyle and diet, while negative change towards irregular patterns in honey consumption is associated with an unhealthy diet and lifestyle.

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REFERENCES

- Altmann, B.A., Trinks, A., Mörlein, D. (2023) Consumer preferences for the color of unprocessed animal foods. *Journal of Food Science*, 88 (3), 909-925. DOI: <https://doi.org/10.1111/1750-3841.16485>
- Alvarez-Suarez, J.M., Tulipani, S., Romandini, S., Bertoli, E., Battino, M. (2009) Contribution of honey in nutrition and human health: a review. *Mediterranean Journal of Nutrition and Metabolism*, 3 (1), 15-23. DOI: <https://doi.org/10.3233/s12349-009-0051-6>
- An, W., Alarcón, S. (2021) From netnography to segmentation for the description of the rural tourism market based on tourist experiences in Spain. *Journal of Destination Marketing & Management*, 19, 100549. DOI: <https://doi.org/10.1016/j.jdmm.2020.100549>
- Ávila Ramos, F., Boyso Mancera, L.P., Borja Bravo, M., Cuevas Reyes, V., Sánchez Toledano, B.I. (2022) Typology of honey consumers with a university education in Mexico. *Revista mexicana de ciencias pecuarias*, 13 (4), 879-893.
- Borowska, A. (2016) Production, consumption and foreign trade of honey in Poland in the years 2004 to 2015. *Roczniki Naukowe Ekonomii Rolnictwa I Rozwoju Obszarów Wiejskich*, 103 (4), 97-111.
- Cucu, A.A., Baci, G.M., Moise, A.R., Dezzi, Ş., Marc, B.D., Stângaciu, Ş., Dezmiorean, D.S. (2021) Towards a better understanding of nutritional and therapeutic effects of honey and their applications in apitherapy. *Applied Sciences*, 11 (9), 4190. DOI: <https://doi.org/10.3390/app11094190>
- Dominteanu, T., Matac, L. M., Alexander, N. V., Pavel, C. D., Iacobini, A., Voinea, A. (2025) Eating behavior of students in relation to the offer available in the vicinity of the University Campus. *Amfiteatru Economic*, 27 (69), 535. DOI: <https://doi.org/10.24818/ea/2025/69/535>
- FAO (2019) Honey. Available at: <https://www.fao.org/3/ca4657en/CA4657EN.pdf> (Accessed 20 January 2024)
- Ganiere, P., Chern, W.S., Hahn, D. (2006) A continuum of consumer attitudes toward genetically modified foods in the United States. *Journal of Agricultural and Resource Economics*, 31 (1), 129-149.
- Güleç, H., Sarper, F. (2022) Honey as a functional food; its culinary status. *Turkish Journal of Agriculture - Food Science and Technology*, 10 (8), 1426-1433. DOI: <https://doi.org/10.24925/turjaf.v10i8.1426-1433.5163>
- Gulevska, F., Martinovski, S. (2018) Nutritive marketing and analysis of consumption behaviour for honey. *Journal of Hygienic Engineering and Design*, 23, 72-80.
- Gündoğdu, E., Çakmakçı, S., Güngör, İ.Ş. (2019) An overview of honey: its composition, nutritional and functional properties. *Journal of Food Science and Engineering*, 9 (1), DOI: <https://doi.org/10.17265/2159-5828/2019.01.003>
- Guziy, S., Šedík, P., Horská, E. (2017) Comparative study of honey consumption in Slovakia and Russia. *Potravinárstvo Slovak Journal of Food Sciences*, 11 (1), 472-479. DOI: <https://doi.org/10.5219/784>
- Ignjatijević, S., Prodanović, R., Bošković, J., Puvača, N., Tomaš-Simin, M., Peulić, T., Đuragić, O. (2019) Comparative analysis of honey consumption in Romania, Italy and Serbia. *Food and Feed Research*, 46 (1), 125-136. DOI: <https://doi.org/10.5937/ffr1901125i>
- Ismail, S., Kahtani, S.A., Adgaba, N., Al-Ghamdi, A.A., Zulail, A. (2014) Factors that affect consumption patterns and market demands for honey in the Kingdom of Saudi Arabia. *Food and Nutrition Sciences*, 05 (17), 1725-1737. DOI: <https://doi.org/10.4236/fns.2014.517186>
- Iyade Adetunji, A. (2020) Food trends and development of new food products. In: O.A. Ijadeniyi, ed. *Food Science and Technology: Trends and Future Prospects*. Berlin, Boston: De Gruyter, pp. 325-344. DOI: <https://doi.org/10.1515/9783110667462-012>
- Kabakci, D., Dodoloğlu, A. (2021) Honey marketing problems and honey consumption habits in Erzurum. *Anadolu Journal of Agricultural Sciences*, 36 (3), 433-445. DOI: <https://doi.org/10.7161/omuanajas.927060>
- Kallas, Z., Alba, M.F., Casellas, K., Berges, M., Degreef, G., Gil, J.M. (2019) The development of short food supply chain for locally produced Honey. *British Food Journal*, 123 (5), 1664-1680. DOI: <https://doi.org/10.1108/bfj-01-2019-0070>
- Kamalja, K.K., Khengar, N.V. (2017) Multiple correspondence analysis and its applications. *Electronic Journal of Applied Statistical Analysis*, 10 (2), 432-462.
- Kaškonienė, V., Venskutonis, P.R. (2010) Floral markers in honey of various botanical and geographic origins: A review. *Comprehensive Reviews in Food Science and Food Safety*, 9 (6), 620-634. DOI: <https://doi.org/10.1111/j.1541-4337.2010.00130.x>
- Khaoula, B., Zineb, N., Zakaria, A., Abdelmajid, S., Asmae, C., Abderrazak, K. (2019) Consumption, preferences and habits of purchasing consumers of honey in Morocco. *Journal of Hygienic Engineering and Design*, 28, 61-65.
- Kleisiari, C., Kleftodimos, G., Vlontzos, G. (2022) Be(e)ha(i)viour(e): assessment of honey consumption in Europe. *British Food Journal*, 125 (4), 1374-1389. DOI: <https://doi.org/10.1108/bfj-12-2021-1300>
- Kowalczyk, I., Stangierska, D., Widera, K., Fornal-Pieniak, B., Latocha, P. (2023) Determinants of honey consumption with special reference to the influence of nutritional knowledge and health status on consumption habits. *Applied Sciences*, 13 (2), 979. DOI: <https://doi.org/10.3390/app13020979>
- Lo, W.-C., Hu, T.-H., Shih, C.-Y., Lin, H.-H., Hwang, J.-S. (2024) Impact of healthy lifestyle factors on life expectancy and Lifetime Health Care Expenditure: Nationwide Cohort Study. *JMIR Public Health and Surveillance*, 10, e57045. DOI: <https://doi.org/10.2196/57045>
- Mata, F., dos Santos, M. (2023) Attitudes, perceptions, and trends of honey consumption in Portugal. *Acta Alimentaria*, 52 (1), 82-90. DOI: <https://doi.org/10.1556/066.2022.00186>
- Mazol, I., Sroka, Z., Sowa, A., Ostrowska, A., Dryś, A., Gamian, A. (2016) Antiradical and antimicrobial activity of phenolic fractions obtained from honeys. *Acta poloniae pharmaceutica*, 73 (2), 379-388.
- Muhindo, M.R. (2019) Determinants of Consumer Demand Across Different Honey Products in Kampala District. PhD-thesis, Makerere University, Kampala, Uganda.

- Nascimento, A.G.M., Toledo, B.S., Guimarães, J.T., Ramos, G.L.P.A., da Cunha, D.T., Pimentel, T.C., Cruz, A.G., Freitas, M.Q., Esmerino, E.A., Mársico, E.T. (2022) The impact of packaging design on the perceived quality of honey by Brazilian consumers. *Food Research International*, 151, 110887.
DOI: <https://doi.org/10.1016/j.foodres.2021.110887>
- Oravec, T., Kovács, I. (2019a) Qualitative study of preferences and attitudes towards honey consumption in Hungary. *Analecta Technica Szegedinensia*, 13 (2), 52-58.
DOI: <https://doi.org/10.14232/analecta.2019.2.52-58>
- Oravec, T., Kovács, I. (2019b) Sensory examination of honey and the effect of sensory characteristics on purchase decisions. *Analecta Technica Szegedinensia*, 13 (1), 64-71.
DOI: <https://doi.org/10.14232/analecta.2019.1.64-71>
- Palmieri, N., Stefanoni, W., Latterini, F., Pari, L. (2022) Italian consumer preferences for eucalyptus honey: an exploratory study. *Sustainability*, 14 (13), 7741.
DOI: <https://doi.org/10.3390/su14137741>
- Petrovič, A., Slavec, A., Dolničar, V. (2017) The ten shades of silver: segmentation of older adults in the mobile phone market. *International Journal of Human-Computer Interaction*, 34 (9), 845-860. DOI: <https://doi.org/10.1080/10447318.2017.1399328>
- Pocol, C.B., Bolboacă, S.D. (2013) Perceptions and trends related to the consumption of honey: a case study of north-west Romania. *International Journal of Consumer Studies*, 37 (6), 642-649.
DOI: <https://doi.org/10.1111/ijcs.12046>
- Pocol, C.B., Šedík, P., Glogoveţan, A.I., Brumă, I.S. (2022) Traceability issues of honey from the consumers' perspective in Romania. *International Food and Agribusiness Management Review*, 25 (5), 709-722. DOI: <https://doi.org/10.22434/ifamr2021.0145>
- Pocol, C.B., Šedík, P., Horská, E. (2018) Honey consumption patterns of young people in Romania. In: *Proceedings of International Scientific Days 2018. Towards Productive, Sustainable and Resilient Global Agriculture and Food Systems*. May 16-17, Nitra, Slovak Republic. DOI: <https://doi.org/10.15414/isd2018.s2-1.11>
- Popescu, A., Guresoae, I. (2019) Consumer's behaviour towards honey purchase-a case study in Romania. *Scientific Papers Series-Management, Economic Engineering in Agriculture and Rural Development*, 19 (1), 451-469.
- Predanócyová, K., Šedík, P., Horská, E. (2023) Exploring consumer behavior and attitudes toward healthy food in Slovakia. *British Food Journal*, 125 (6), 2053-2069.
DOI: <https://doi.org/10.1108/bfj-06-2022-0517>
- Ribeiro, M.I., Fernandes, A.J., Cabo, P.S., Diniz, F.J. (2019) Trends in honey purchase and consumption in trás-os-Montes Region, Portugal. *Economy of Region*, 15 (3), 822-833.
DOI: <https://doi.org/10.17059/2019-3-15>
- Roman, A., Popiela-Pleban, E., Kozak, M. (2013) Factors influencing consumer behavior relating to the purchasing of honey part 1. The buying process and the level of consumption. *Journal of Apicultural Science*, 57 (2), 159-172.
DOI: <https://doi.org/10.2478/jas-2013-0026>
- Šánová, P., Svobodová, J., Hrubcová, B., Šeráková, P. (2017) Segmentation of honey buyers' behaviour by conjoint Analysis. *Scientia Agriculturae Bohemica*, 48 (1), 55-62.
DOI: <https://doi.org/10.1515/sab-2017-0008>
- Šedík, P., Čvirik, M., Pocol, C. B., Oravec, T. (2025) Factors influencing honey choice in Slovakia and Hungary: A comparative study. *Amfiteatru Economic*, 27 (69), 431.
DOI: <https://doi.org/10.24818/ea/2025/69/431>
- Šedík, P., Hudecová, M., Predanócyová, K. (2023) Exploring consumers' preferences and attitudes to honey: generation approach in Slovakia. *Foods*, 12 (10), 1941.
DOI: <https://doi.org/10.3390/foods12101941>
- Šedík, P., Pocol, C.B., Horská, E., Fiore, M. (2019) Honey: food or medicine? a comparative study between Slovakia and Romania. *British Food Journal*, 121 (6), 1281-1297.
DOI: <https://doi.org/10.1108/bfj-12-2018-0813>
- Singh, P., Ban, Y. G., Kashyap, L., Siraree, A., Singh, J. (2020) Sugar and sugar substitutes: recent developments and future prospects. *Sugar and Sugar Derivatives: Changing Consumer Preferences*, pp. 39-75. DOI: https://doi.org/10.1007/978-981-15-6663-9_4
- Sparacino, A., Merlino, V.M., Blanc, S., Borra, D., Massaglia, S. (2022) A choice experiment model for honey attributes: Italian consumer preferences and socio-demographic profiles. *Nutrients*, 14 (22), 4797. DOI: <https://doi.org/10.3390/nu14224797>
- Szabó, R.T., Mézes, M., Szalai, T., Zajác, E., Weber, M. (2016) Colour identification of honey and methodical development of its instrumental measuring. *Columella: Journal of Agricultural and Environmental Sciences*, 3 (1), 29-36.
DOI: <https://doi.org/10.18380/szie.colum.2016.3.1.29>
- Trieste, L., Bazzani, A., Amato, A., Faraguna, U., Turchetti, G. (2021) Food Literacy and Food Choice – a survey-based psychometric profiling of consumer behaviour. *British Food Journal*, 123(13), 124-141. DOI: <https://doi.org/10.1108/bfj-09-2020-0845>
- Ványi, G.Á., Csapó, Z., Kárpáti, L. (2011) Evaluation of consumers' honey purchase habits in Hungary. *Journal of Food Products Marketing*, 17 (2-3), 227-240.
DOI: <https://doi.org/10.1080/10454446.2011.548293>
- Vapa-Tankosić, J., Ignjatijević, S., Kiurski, J., Milenković, J., Milojević, I. (2020) Analysis of consumers' willingness to pay for organic and local honey in Serbia. *Sustainability*, 12 (11), 4686.
DOI: <https://doi.org/10.3390/su12114686>
- Völckner, F., Hofmann, J. (2007) The price-perceived quality relationship: a meta-analytic review and assessment of its determinants. *Marketing Letters*, 18 (3), 181-196.
DOI: <https://doi.org/10.1007/s11002-007-9013-2>
- Zanchini, R., Blanc, S., Pippinato, L., Di Vita, G., Brun, F. (2022) Consumers' attitude towards honey consumption for its health benefits: first Insights from an econometric approach. *British Food Journal*, 124 (12), 4372-4386.
DOI: <https://doi.org/10.1108/bfj-09-2021-0992>
- Zhang, X.H., Gu, H.W., Liu, R.J., Qing, X.D., Nie, J.F. (2023) A comprehensive review of the current trends and recent advancements on the authenticity of honey. *Food Chemistry: X*, 19, 100850. DOI: <https://doi.org/10.1016/j.fochx.2023.100850>