

TRENDS IN HONEY CONSUMPTION AND PURCHASING HABITS IN SOME EUROPEAN COUNTRIES

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ABSTRACT

Honey is a staple food of animal origin with many beneficial properties. Hence, studying consumption and purchasing habits is an important issue. Our research aims to present the market situation and conditions of the domestic beekeeping sector from the consumer's point of view. We considered it appropriate to present the beekeeping market because the European Union is the second largest honey producer in the World, and Hungary is one of the largest honey producer in the EU. Thus, global and EU trade changes, market trends and changes in consumer habits are significant factors influencing the domestic situation. The research aims to find out the direction of honey consumption and purchasing patterns and trends in European honey consumption. The market situation is presented through a review of the relevant domestic and foreign literature, and statistical databases (EU Member States' honey programmes, KSH, OMME, Statista databases and reports) are analysed. We chose an online questionnaire survey method to assess consumption and purchasing habits in Hungary and present the results in comparison with similar Hungarian studies. To analyse the situation in Europe, we have collected and analysed relevant research reports and primary and secondary studies from several EU countries. Finally, the data from each country are compared, highlighting similarities and differences, to define a typical European honey consumer profile.

Keywords: honey, honey consumption trends, purchasing habits, European countries

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INTRODUCTION

The literature on food consumption, health and the environment is increasingly interconnected (Kiss et al., 2019; Bauerné Gáthy et al., 2022). In recent years, consumer preferences in nutrition have been influenced by new factors such as health and environmental consciousness (Bauerné Gáthy et al., 2021) or ethical production processes (Balsa-Budai - Szakály, 2021). Honey, which is part of a healthy lifestyle, contributes greatly to the proper functioning of the immune system, is an important part of a healthy diet as a functional food, a valuable and rich source of biologically active substances (Ćelan et al., 2022). Honey is undoubtedly a product of trust, and the direct relationship between beekeepers and consumers is growing because of increasing direct sales by producers. Consumer confidence is increasing, leading to a continuous rise in the volume sold (AM, 2019).

Honey is the oldest known sweetener, and its medicinal use dates back to 1550 BC in ancient Egypt (Weiner Sennyei, 2022). Beekeeping was also a well-known profession among the ancient Greeks, to the extent that they had a god, Aristheus (Feketéné Ferenczi et al., 2021_A). Following the EU Directive, the Hungarian Food Guide defines honey as "the natural sweet substance collected by *Apis mellifera* bees from the nectar or sap of living plant parts or from the secreted material of living plant parts by insects sucking plant sap, which is collected by bees, transformed by the addition of their material, stored, dehydrated and matured in spleens" (Food Guide, 2002). The transformation of nectar into honey is a highly complex process. The bees first collect the nectar from the flowers and ripen it by partial ripening, after which it undergoes enzymatic digestion in the bees' stomachs. The mature nectar is dried by evaporation until the honey has a moisture content of around 13-18% (Mijanur Rahman et al., 2014). The benefits of consuming honey as food goes far beyond its use as a sweetener (FAO, 2019). In contrast to most sweeteners, it contains, in addition to carbohydrates (fructose, glucose), vitamins, various enzymes (substances that regulate the transformation of sugars), characteristic aromas of its origin, flavours, minerals, trace elements necessary for life processes, liver and kidney protective hormones,

antiseptics, anti-inflammatory substances, a total of about 181 known components (Örösi, 1967; Vallianou et al., 2014, Urbánné Treutz - Treutz, 2017). The beneficial effects of honey on the human body have been demonstrated by several studies (Bilsel et al., 2002; Lusby et al., 2005; Kantar, 2016; Meo et al., 2017; Pasupuleti et al., 2017; Cianciosi et al., 2018; Testa et al., 2019; Kafantaris et al., 2021; Marić et al., 2021). Therefore, honey consumption has many physiological benefits, is becoming increasingly popular with consumers, and has a wide range of uses (natural sweetener, food, medicine, and beauty care) (Yeow et al., 2013). This is why honey has become the third most frequently adulterated food in recent decades, after olive oil and milk (Feketéné Ferenczi et al., 2021_A). Due to the different types of counterfeits, the investigation of the quality and origin of honey is a significant challenge (Soares et al., 2017). In addition, the pollination activity of bees contributes to the maintenance of biodiversity, affects agricultural production in terms of quantity and quality (Vrabcová - Hájek, 2020) and the sustainability of the apiculture sector (through income-generating activities) (Vida - Feketéné Ferenczi, 2022). We, therefore, consider it necessary to perform an overview study, which identifies and compares European consumers' consumption habits and their expectations of the product, since the benefits mentioned above would be necessary to promote honey consumption and establish the honey culture. In order to do this, we compare the production and consumption data of some European countries, highlighting the similarities and differences.

Honey production and honey consumption

Bee colonies are vital for agriculture and the environment. In addition to honey and other bee products (e.g. pollen, royal jelly, propolis), bee colonies play a unique role in pollination along with other insects, biodiversity and landscape conservation, environmental protection and rural development; beekeeping is an excellent work in the open air and a source of income that can reduce the rural population's migration to cities (Popescu, 2017; Ferenczi et al., 2021_A). Environmental, geographic and climatic conditions can vary honey's pollen content and relative humidity. Among products of animal origin, honey is not the only one that has to face consumption restrictions due to different cultural and religious habits (Vida - Szűcs, 2016_A, Vida - Szűcs, 2020). Honey is produced on all five continents, and its consumption varies from country to country due to cultural reasons and dietary habits (FAO, 2019). Based on the literature, there were around 94 million beehives worldwide in 2020, compared to 80 million beehives in 2010. Global honey production volume peaked in 2017 at around 1.88 million tonnes and has since declined to around 1.77 million tonnes. The global honey market is estimated to be worth around \$8 billion in 2020 (Statista, 2022).

Asia, specifically China and India are the main drivers of international honey production (China will have a 27.42% share of global honey production in 2021) and have consolidated their production leadership in recent years, with an average annual increase in honey production of over 10,000 tonnes. In contrast, other regions of the World, such as Europe and the Americas, have seen production growth of fewer than 2,000 tonnes per year (FAOSTAT, 2022). According to Statista, 2023, China was the World's leading natural honey producer in 2021. China produced more than 472,000 tonnes of honey, almost five times higher than the amount produced in Turkey, which was second in that year.

Beekeeping is common to all EU countries and is characterised by a diversity of production conditions, yields and beekeeping practices. The EU is the second largest honey producer after China. However, it is also a net importer of honey from third countries. The EU countries with the most significant honey production (Romania, Spain, Hungary, Germany, Italy, Greece, France and Poland) are mainly located in Southern Europe, where the climate favours beekeeping. Besides honey, the EU produces many apiculture products, including pollen, propolis, royal jelly and beeswax. All honey marketed in the EU must fulfil the quality and labelling rules in the Honey Directive (2001/110) (The Council of the European Union, 2002).

In *Figure 1*, we can see the significant honey producer countries. *Figure 1* contains the data in tonnes, so we can see with burgundy those countries whom average honey production is the highest, above 20,258 tonnes. This figure is based on the average production from 2012 to 2021.

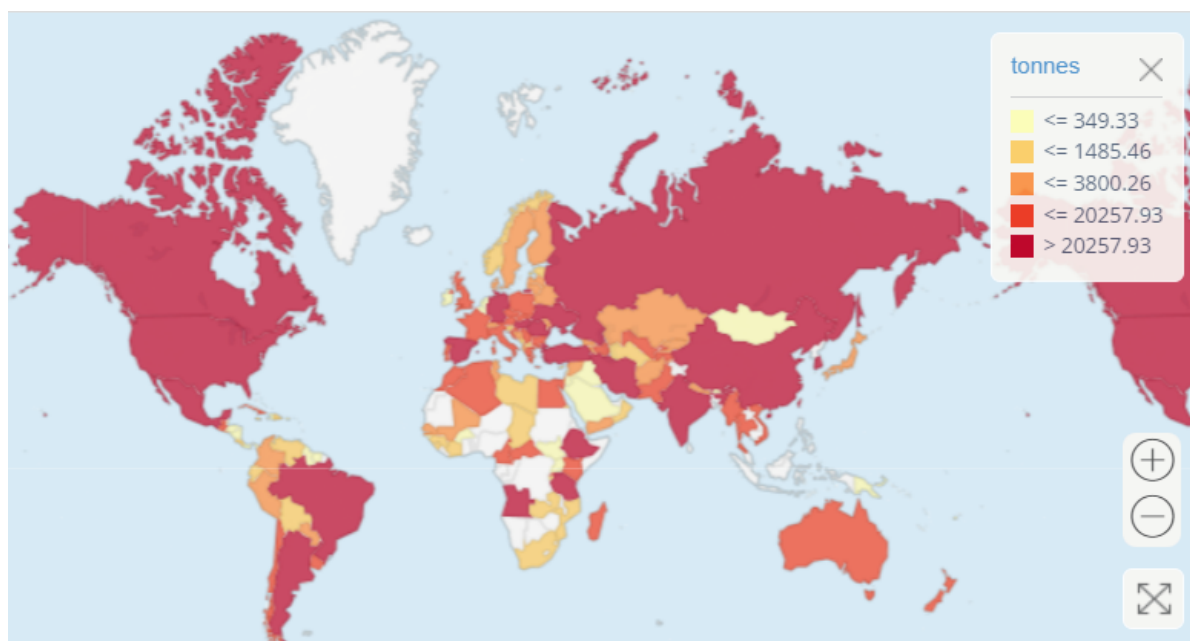


Figure 1: Production quantities of natural honey by country (2012 – 2021 average)
Source: FAOSTAT, 2022

The European Union is one of the World's largest honey producers and the largest importer of honey. However, according to FAOSTAT, 2022, the amount of honey produced in the EU-27 Member States has decreased in recent years, reaching 217.9 thousand tonnes in 2020, compared to 249.1 thousand tonnes in 2018 and 225.8 thousand tonnes in 2019 (FAOSTAT, 2022).

EU is only 60% self-sufficient in honey, so imports are needed to cover the EU's domestic consumption. The leading suppliers of imported honey are Ukraine (31%) and China around 28% of EU imports (EC, 2022).

The following figure (Figure 2) shows the leading producer within the European Union. As shown in *Figure 2*, each year, the leader in Spain, Hungary, was the second-largest honey producer in the EU in 2015 and 2017 and the third-largest in 2018.

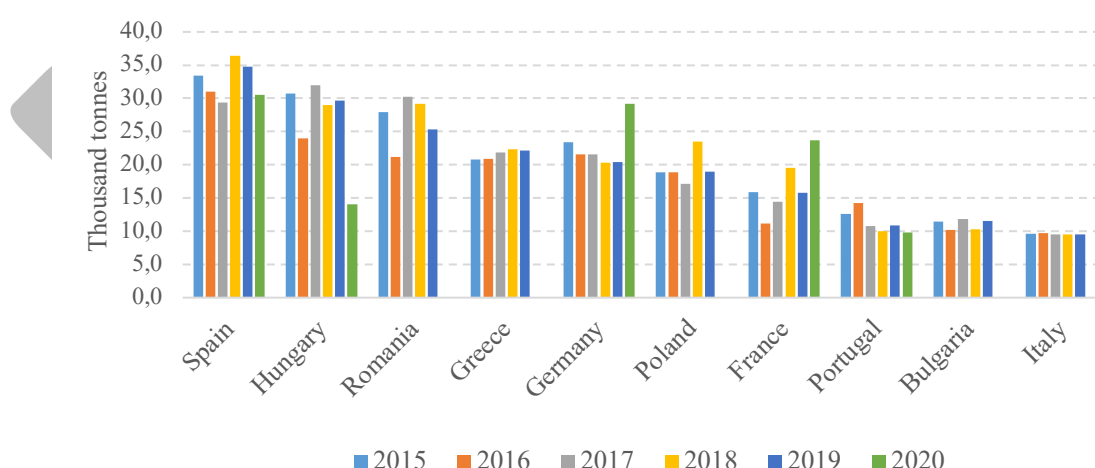


Figure 2: The EU's largest honey producers 2015-2020
Source: own construction based on FAOSTAT, 2022

Beekeeping has a significant place in EU agriculture, mainly because the demand for honey is constantly growing. In 2019, the biggest consumers of honey were Germany (69 thousand tonnes), France (52

thousand tonnes) and the United Kingdom (45 thousand tonnes), accounting for 38% of the EU's 28 consumption. In addition, other countries such as Spain, Poland, Italy, Greece, Romania, the Netherlands, Portugal, the Czech Republic and Croatia accounted for 47% of total EU consumption.

The EU average per capita consumption of honey is 1.7 kg/person/year, compared to a global average of 250-300 grams per capita. In terms of average annual per capita honey consumption, Croatia (2.59 kg/person/year) and Greece (2.47 kg/person/year) are the leaders. Below the average are Romania (1.3 kg/person/year) and Austria (1.2 kg/person/year), followed by Germany and Hungary, where the consumption of honey is similar, almost 1-1 kg/person/year (BMEL, 2021). Even lower in Sweden and Finland, 0.8-0.8 kg/person/year (Jordbruksverket, 2021; Natural Resources Institute Finland, 2021). Spain, the largest European honey producer, has a per capita honey consumption of only around 0.4 kg (Mercasa, 2020; Gedeon et al., 2020; Popescu et al., 2021). In the case of Hungary, honey consumption has been increasing from 0.3 kg/person/year in 2010 to 0.8 kg/person/year in 2018. If per capita honey consumption increased by ten dkg annually, an extra 1,000 tonnes of domestic honey could be safely marketed (Feketéné Ferenczi et al., 2021_B).

In 2020, there were 615,000 beekeepers in the EU with 18,926,000 hives, with the highest numbers in Spain (2,967,000 hives), Romania (2,247,000 hives) and Poland (1,766,000 hives) (EC, 2022). Overall, the number of hives in European apiaries increased by 3.9% compared to the previous year. There has been a decrease in Hungary, as the number of hives fell from 1,206,000 in 2019 to 1,163,000 in 2020, according to the domestic autumn monitoring surveys. Bee density has also decreased from an average of 13.44 hives/km² in 2017 to 12.5 hives/km² in 2020 (OMME, 2021).

In Hungary, despite its small size, the beekeeping sector is of crucial importance for agriculture (Halmágyi - Zajác, 2008), both in terms of its contribution to the gross production value of agriculture and its contribution to the value of livestock production.

In Hungary, the production difficulties experienced in the last three years (e.g. changes in weather conditions), the difficulties in dealing with the difficult bee health problems, and the adverse effects of plant protection are reflected in the volume of domestic honey production. The highest honey production was 32 thousand tonnes in 2017, which according to KSH data, was 18 thousand tonnes in 2019 and only 14 thousand tonnes in 2020 (KSH, 2022).

A specific feature of Hungarian honey sales is that 64-66% of the honey produced is sold to wholesalers in barrels, 30% directly to consumers, 3-5% is packaged for retailers and shops, and about 1% is sold for industrial use (AM, 2019).

The evaluation of Hungarian consumption and purchasing habits is presented based on a questionnaire survey, which was conducted to find out how and in which direction honey consumption and purchasing habits have changed in Hungary today and whether there are regional differences in the respondents' answers.

The study's primary aim is to present the evolution of honey consumption in some European countries, especially in Hungary and neighbouring countries. Furthermore, the study aims to identify a typical European honey consumer profile based on the results.

MATERIALS AND METHODS

For the present publication, we used documentary analysis. This qualitative method is a research method that allows the analysis of a material, a written text so that its entire content is considered and conclusions can be drawn. We also reviewed statistical databases on the subject (European Union Member States' Beekeeping Programmes Data, FAOSTAT, EUROSTAT, KSH, OMME, Statista) and other documents (e.g. publications, studies, reports). By analysing the statistical sources and documents used, and the results, reports and experiences to date, we have formulated the causal links, drawn conclusions and made recommendations for the sector. Many sectoral analyses and studies have been conducted using similar methodologies (Tikász et al., 2008; Szűcs et al., 2008; Szakály et al., 2009; Vida, 2013; Szigeti et al., 2014; Kiss et al., 2016; Vida - Szűcs, 2016_B).

Honey is a key food of animal origin and has a number of beneficial properties, so the study of consumption and purchasing habits is an important issue. The research provides an overview of the situation, consumer habits, trends and consumers of honey consumption in national and international markets. The online questionnaire was structured according to the 4Ps of the marketing mix, with questions on honey as a product, the way and frequency of honey consumption (Product), its price (Price), place of purchase (Place), and promotional opportunities (Promotion).

The results obtained from the sample were evaluated, subjected to descriptive statistical analysis, and then analysed for associations based on background variables, including gender, age, education, type of locality, and county. Our online survey, conducted between February 2022 and April 2022, received 272 responses (n=272). Responses were evaluated using SPSS 22.0 data analysis and statistical software, and the results are not representative. The statistical data were supported and compared with related current research findings collected from relevant literature sources.

RESULTS AND DISCUSSION

We start with the analysis of Hungary because our primary research focuses on Hungarian consumption patterns. Our first question was whether the respondents usually consume honey. 43.8% of the respondents consider themselves regular honey consumers, 48.9% are occasional honey consumers, and 7.4% do not consume honey. Overall, 92.7% of respondents consume honey with some frequency, so the responses suggest that honey is a popular and frequently consumed product.

The next question asked respondents about the frequency they consume honey (*Figure 3*). This question, linked to the previous question, further breaks down what respondents mean by regular and occasional consumption. The highest proportion consumed a few times a month (29.8%), followed by weekly (22.9%) and daily (21.0%). Analysing the responses, we find that the proportion of respondents who consume honey daily and weekly is 43.9%, the same as the proportion who consume honey regularly in the previous question. The combined proportion of those who consume honey a few times a month (29.8%) and less than a month (14.5%) is 44.3%, which is very similar to the proportion of occasional honey consumers in the previous question. Thus, respondents understood regular honey consumption to mean daily and weekly and occasional honey consumption to mean consumption once a month or less. Overall, it is also an essential finding that nearly 44% of respondents consume honey at least once a week, so the findings from the literature review that the number of honey consumers is increasing year on year seem to be confirmed in our sample.

Oravecz - Kovács (2019) also conducted qualitative interviews in Hungary in 2017 (n=86), in which the respondents consumed and purchased honey at least monthly. Their results confirmed Lászlóffy's (2014) earlier findings that consumers' perception of honey has improved in recent years, honey consumption has increased, and respondents perceived honey as a healthy and natural sweetener.

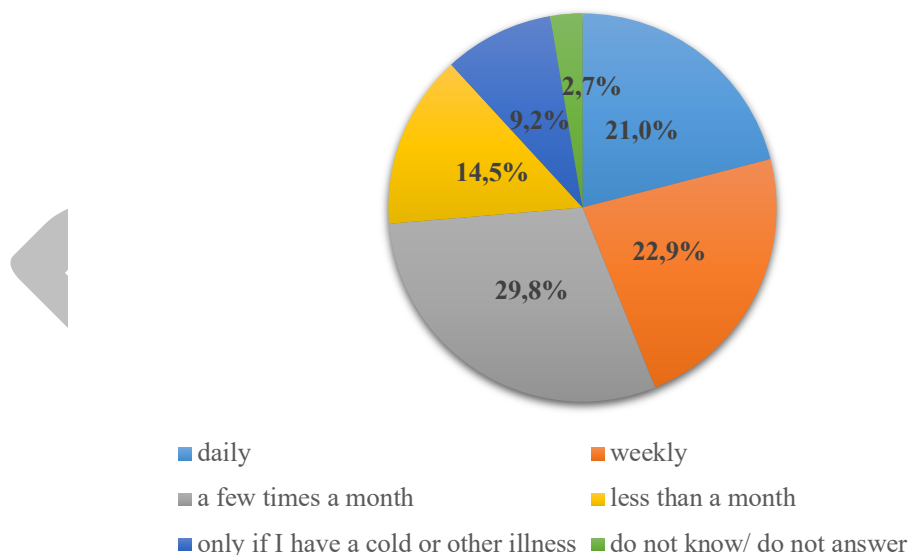


Figure 3: Frequency of honey consumption among honey consumers (n=262)

Source: own estimates based on questionnaire data, 2022

A representative survey (n=1385) by Oravecz - Šedík (2022) found that a significant proportion (96%) of respondents had consumed honey in the form of honey bread or honey tea as children. Respondents consume significantly more honey in the winter (48.3%), in the autumn (30%) and during the Christmas festive season (29.1%). When looking at the frequency of consumption, it was found that the majority

consumed honey several times a month (29.2%) or several times a week (24.7%), with 16.5% consuming honey daily. Based on the respondents' answers, their annual honey consumption is estimated at 2 kg per person and around 6 kg per household. Honey consumption is typically associated with breakfast, but there is also significant consumption during dinner. Most respondents (55%) consciously use honey as a healthier substitute for sugar (Oravecz - Šedík, 2022).

After analysing the frequency of consumption, we wanted to know in what form respondents prefer to consume honey, where they were allowed to select more than one response option, so in *Figure 4*, we have shown the number of responses rather than a percentage. *Figure 4* shows that respondents most commonly consumed honey mixed in tea (211), with consumption on its own also popular (125), followed by the option of mixing it into cakes (113) and spreading it on bread (109). Interestingly, mixing it in coffee, adding it to fruit, and mixing it in milk or even in lemonade is also popular. Overall, the responses show that honey is becoming increasingly popular in the diet, and respondents are finding more and more alternative uses for honey, which could ultimately increase the frequency of consumption.

Oravecz - Šedík (2022) also examined how the respondents consume honey. In their survey, the most popular use is to flavour drinks (51.3%), followed by direct consumption (19.1%) and spreading on bread, added to pancakes, fruit, and yoghurt (17.8%). Baking and cooking have a minor use (9.1%). In contrast, honey is used for other purposes (honey-containing medicinal preparations, cosmetics) by 2.7% of the respondents (Oravecz - Šedík, 2022). In another question, 65.7% of respondents mentioned that they regularly add honey to tea and coffee (Oravecz - Šedík, 2023_A).

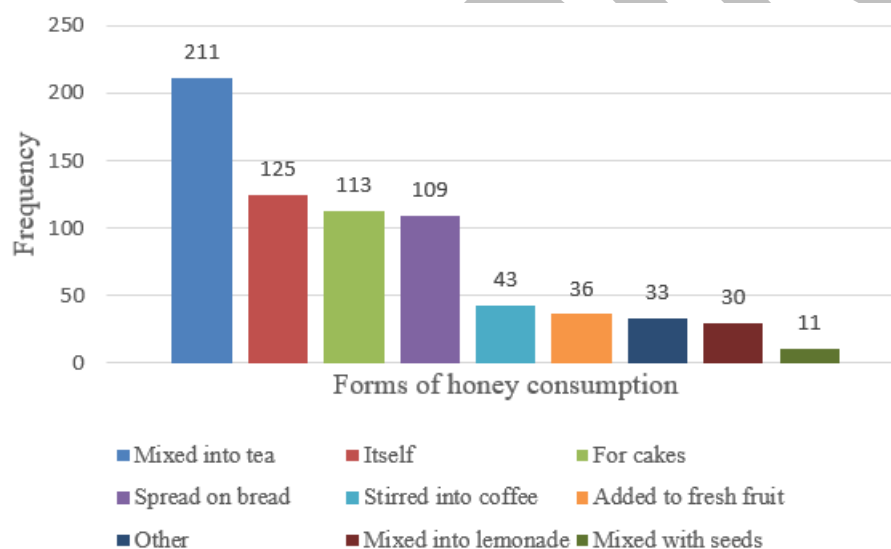


Figure 4: How do you usually consume honey? (n=264)

Source: own estimates based on questionnaire data, 2022

Figure 5 includes two questions asking which honeys the research participants know and have tasted. It can be seen that acacia honey and mixed flower honey are the best known and tasted the most, with awareness and tasting of these two types of honey showing a strong correlation. The popularity of acacia honey is also because it has been considered a Hungaricum in Hungary since 2014. Linden honey is also one of the better-known types of honey, but fewer people have tasted it than have heard of it. In the case of rapeseed honey, there is little difference between familiarity and taste. At the same time, sunflower honey is also well known but a less tasted type. The least-known types of honey are chestnut honey, phacelia honey and wild tobacco honey. *Figure 5* shows that few respondents knew and tasted them.

In Oravecz - Šedík (2022) survey, they found that acacia honey is the most popular type of honey among Hungarian consumers (46.1%), followed by mixed flower honey (14%), linden honey (9.5%), rapeseed honey (4.5%), while the least popular are silk grass honey (2.2%), pine honey (1.9%), chestnut honey (1.2%), sunflower honey (0.8%), other (1%). The survey shows that Hungarian consumers are willing to try different flavoured kinds of honey (Oravecz - Šedík, 2022; Oravecz - Šedík, 2023_A).

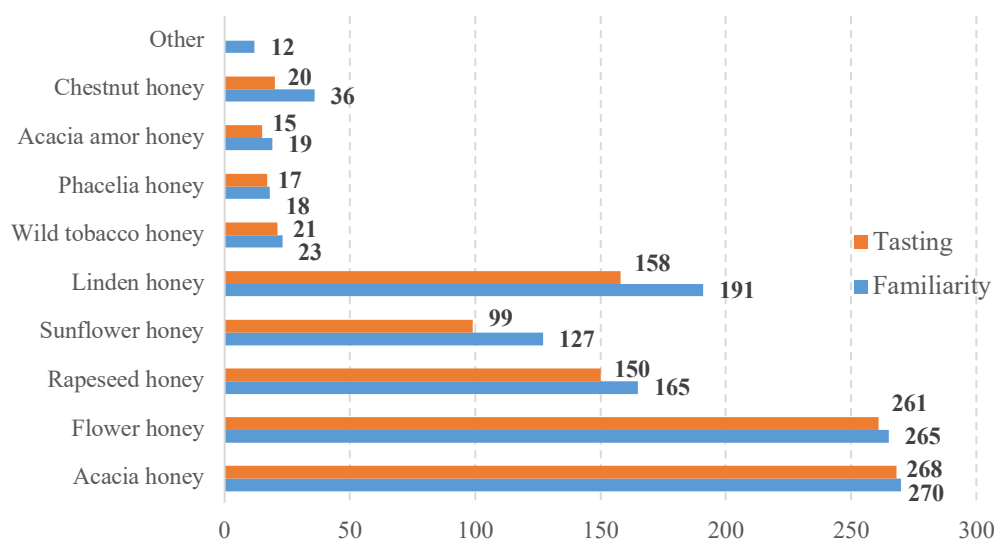


Figure 5: Tasting and familiarity of different honey types by the respondents (n =270)

Source: own estimates based on questionnaire data, 2022

Concerning the consumption of honey, we also asked respondents which packaging they prefer to consume honey. Most respondents consume honey from the jar they buy (86.9%), with very few respondents putting it in their own jar or honey jar. Nevertheless, the honey jar's appearance is essential, as it can communicate and inform the consumer during the purchase. Glass packaging also has a lower environmental impact and is, therefore, preferable to plastic packaging (Vuk et al., 2023).

The next question was about which other beekeeping products, besides honey, were known to the research participants. Among the answers, the highest number of answers was given to pollen (193 respondents), beeswax (187 respondents), propolis and royal jelly (184-184 respondents); 29 respondents mentioned bee venom, while 1-1 respondent also mentioned splenic honey, honey bread and honey wine. 33.1% of the respondents regularly use a beekeeping-related product for health problems. This leads to the conclusion that respondents are well aware of other beekeeping products related to honey, which may increase the demand for honey and beekeeping products.

The next section of questions is to explore the buying habits of honey. Based on the answers to our question ("How often do you or a family member buy honey?") (n=263), we found that most people buy honey quarterly (36.9%) and monthly (30.0%). However, the results also include a significant proportion of people who buy honey less frequently (17.5%). Those who do not buy honey (14%) mainly get it as a gift, find it expensive or produce it. We also had a question about the packaging of honey; nearly 56.0% of respondents mostly buy the product in 1 kg jars, and even 40.0% of respondents chose the half kg jar.

Oravec - Šedík (2023_A) also examined honey purchasing habits and the factors influencing purchasing. The authors found that 83.9% of respondents buy honey. In comparison, the remaining 16.1% do not buy honey themselves but from a family member or receive it as a gift. Most people buy honey when they run out or need it (41.2%), typically every three months (22.2%) or every year (13.4%), with the fewest (7.1%) buying honey monthly. The majority buy honey in 1 kg packages (41.3%), followed by 2-5 kg (19.4%) and 0.5 kg (13.9%). The minor proportions were those buying 0.25 kg (5.1%) and 4.1% buying more than 5 kg.

Table 1 shows the aspects that are considered necessary when purchasing honey. Statements were made and rated on a Likert scale from 1 to 5, where "1=not important" and "5=very important". The responses to the questions were subjected to descriptive statistical analysis. The mean and standard deviation were calculated along with the number of items. Based on the data from the questionnaire, the results were ranked according to the mean, thus finally obtaining the criteria necessary for the respondents when making a purchase. They were reliable, delicious, produced in controlled and hygienic conditions, domestic product (with the producer's name on the label), flowing, not crystallised, clearly visible in the bottle and, finally, practical packaging. Hungarian consumers are well informed about honey

crystallisation, as the vast majority of respondents know that it is a natural process and does not affect the quality of honey. It is also likely that the information they received when buying from the producer helped them to be well informed. Overall, it can be concluded that, besides taste, production conditions are the most crucial factor when purchasing honey.

Table 1: Important aspects of purchasing honey (n=256)

Descriptive statistics			
	N	Mean	Standard deviation
It comes from a reliable source.	256	4,68	,937
It should be delicious.	256	4,64	,931
It controlled hygienic conditions.	256	4,46	1,109
Be a domestic product.	256	4,39	1,166
The label should state the producer.	256	4,22	1,204
It should frequently be flowing.	256	3,93	1,157
It is not crystallised.	256	3,82	1,448
Be clearly visible.	256	3,81	1,276
Practical packaging.	256	3,41	1,243
Organic quality.	256	3,36	1,257
Tasteful packaging.	256	3,23	1,258
Glass tubes should be usable for other purposes.	256	3,05	1,390
As cheap as possible.	256	2,53	1,328
It comes from a reliable source.	256		

Source: own estimates based on questionnaire data, 2022

Comparing our questions with the survey of Oravecz - Šedík (2023_B), we found similarities in honey purchasing habits. In their survey, the quality of honey was the most important factor (87.5%) and the taste of honey (83.4%). This is followed by the texture of honey (69.9%), type (69.6%), country of origin (67%) and producer (63.3%). Internationally, a similar trend is observed, with natural product characteristics (taste, colour, price, origin) being more important than brand, trademark, packaging and advertising.

The next set of questions is related to the price of honey. First, the affordability of the price of honey asked: 70.0% of the respondents think that honey is affordable today. Most of them buy honey for between 2,000 and 3,000 HUF (43.3%), but 24.4% spend up to 3,000 HUF on honey. Among the responses, 15% answered, "I do not buy honey" (11.8%) because they get it as a gift or produce it themselves. The remaining percentages answered "I do not know/dot no answer" (5.3%). Then we analysed "Would you be willing to pay a higher price for honey from a Hungarian producer?" and more than one-third of the respondents answered yes, which means that respondents have a positive attitude towards Hungarian honey.

The survey of Oravecz - Šedík (2023_A) found that, on average, respondents are willing to pay between 2,300-3,300 HUF for 1 kg of honey (67%). 9.5% of respondents are willing to pay up to 3,800 HUF for honey, while 8.2% are willing to pay more than this for 1 kg of honey. 9.7% of respondents are willing to pay 1,800 HUF for 1 kg of honey, while 5.6% are willing to pay less than 1,800 HUF.

Among the questions on the place of purchase, we mainly wanted to ask where honey is bought. The 263 responses found that most people buy honey directly from the beekeeper at the market (129 people) or at home (127 people). Relatively many receive it as a gift (81 people) or buy it in hypermarkets and supermarkets (70 people).

Oravecz - Šedík, 2023_A found regarding the place of purchase, it is clear that honey is mainly purchased directly from beekeepers (50.3%), followed by honey from farmers' markets and fairs (43.5%). Fewer people (32%) buy honey from shops, and the least commonplace of purchase is the Internet (13.7%).

When examining our questions on promotion, the survey asked the respondent, "Have you ever seen an advertisement promoting honey consumption?", 32.2% of respondents had seen an advertisement promoting honey consumption, 62.8% had not, and 5% did not know the answer—those who had seen such advertising, mainly on the Internet, social media or TV.

Oravec - Šedík (2023^c) asked consumers where they get their information about the beneficial physiological effects of honey. A significant proportion of respondents obtained information from the Internet (38.3%) and from exhibitions, fairs and farmers' markets. The role played by books, professional publications, newspapers, television, doctors, dieticians, educational institutions or radio is significantly smaller.

Poland

Kowalczyk et al. (2023), in a study of the behaviour of Polish honey consumers (n=434), found that nearly 90% of respondents consume honey, 21.2% of respondents consume honey once a month on average, and 20.28% consume honey daily or almost daily. The frequency of several times a month (19.82%) and several times a week (19.12%) was selected by 19-20% of respondents. Analysis of the changes in the frequency of honey consumption during the COVID-19 pandemic showed that 34% of respondents even increased their honey consumption. The COVID-19 epidemic has shaped our lives in the past few years. Many new restrictions and strict regulations accompanied it, and the consequences had to be dealt with in the World, which also affected everyone's life (Vida - Popovics, 2021).

According to a study by Roman et al. (2013), one in five people in Poland consumes honey daily, while Kopala et al. (2019) found that only 5% of Polish consumers do not consume honey. According to the Polish survey, women and higher-income earners use honey mainly in cakes, vegetarian dishes, desserts, fruit and vegetable preserves and hot drinks. Respondents over 46 years of age and those with higher education added honey to sandwiches, cheese, meat dishes, cold drinks and for direct consumption, compared to younger respondents who were more likely to add honey to desserts and hot drinks.

The analysis of the respondents' preferences regarding the type of honey used showed that multi-flower honey is consumed most often (80.2% of indications). Consumed much less frequently are linden honey (59.9%) and acacia honey (52.0%). The fewest respondents mentioned heather honey (24.7%) as their preference. The most critical factors for Polish consumers when purchasing honey are the type of honey, the method of production and the place of purchase. The factors that are less important in determining the purchase of honey are the type of packaging, the consistency of the honey, the price, the information on the label and the size of the packaging, with the least important factor being the attractiveness of the label. The place of production, the conditions of production and packaging are relevant for older people, those with higher education and incomes. In this survey, most respondents received honey from family and friends (49.0%) and bought it at a marketplace (40.3%). More than a third of the respondents indicated that they bought honey from an apiary, and nearly one in four respondents did so at a supermarket. Less-popular places of purchase included online shopping sites (16.4%) and neighbourhood stores (11.3%). Men are statistically significantly more likely to buy honey from neighbourhood and fruit and vegetable shops. At the same time, women are more likely to obtain honey from friends and family. Younger people (18–46 years) are more likely to buy honey in markets, bazaars, and online. In comparison, older people obtain honey from family and friends (Kowalczyk et al., 2023).

Slovakia

Hudecová et al. (2021) surveyed the consumption of beekeeping products in Slovakia (n=332). The most consumed beekeeping product was honey, with only 12% of respondents claiming to consume other beekeeping products (e.g. royal jelly, propolis). For almost 90% of Slovak consumers, the whole family consumes beekeeping products. Guziy et al. (2017), who compared honey consumption in Russia and Slovakia, found similar results. In this case, 87% of Slovak respondents reported honey consumption by the whole family.

Among Slovaks, the reasons for consuming beekeeping products were: to strengthen the immune system (71%), for the honey's recognised medicinal properties (60%), to prevent illness (58%) and for its anti-inflammatory properties (36%). The most important factor for Slovak consumers when buying honey was the country of origin, followed by taste, type of honey and price. 27% of respondents consumed honey because of its taste. 62% of the respondents buy honey and other beekeeping products directly from domestic producers (Hudecová et al., 2021). The size of the honey packaging was rated as the least important factor, together with packaging and design (Guziy et al., 2017) and promotions and packaging materials (Hudecová et al., 2021).

When identifying the critical factors influencing the purchase of beekeeping products, the most crucial factor was quality, with 62% of respondents considering beekeeping products have better quality in

Slovakia than those from foreign producers (Hudecová et al., 2021). In addition, according to the research by Wu et al. (2015), consumers agreed with the statement that locally produced honey is of better quality than imported honey. Thus Slovak honey consumers have positive attitudes towards domestic honey. The results of Hudecová et al. (2021) showed that most consumers consume honey all year round, and they identified acacia honey as the most preferred type. According to the survey, the optimal price for 1 kg of honey is between €7 and €10, purchased directly from beekeepers or in supermarkets, as retail stores offer quite a large variety of honey.

The Czech Republic

Šánová et al. (2017) examined the honey purchasing behaviour of consumers (n=234) in the Czech Republic from a different perspective. Their analysis was based on price, origin, type of honey and organic quality. The target groups of honey consumers studied were from Prague and the Central Bohemia region, representing the country's most considerable purchasing power. The research results showed that consumers are mainly interested in the price and origin of honey. An essential parameter for buying honey is the crystallisation of the honey. Although this does not affect the quality parameters of honey, it significantly impacts consumers' subjective perception of honey quality when buying honey in the Czech Republic. When buying honey, the most important factor is the origin of the honey (63.15%), followed by price (18.58%), crystallisation (8.20%), type of honey (6.19%) and organic quality (3.88%). The least popular is mixed flower honey from outside the EU, which is non-organic, crystallised and available at high prices. The ideal honey for consumers has the following characteristics: organic, non-crystallised (forest) honey from local Czech beekeepers, available at a price of up to CZK 120/kg. The sample shows regional differences in honey purchasing. Compared to respondents in Central Bohemia, respondents in Prague mainly consider price, crystallisation, organic quality and type of honey. 24% of respondents in Prague base their decision on price. Respondents in Central Bohemia pay almost no attention to the organic quality of honey, compared to respondents in Prague, who pay more attention to this. The purchasing preferences of consumers with different levels of education also differ. Respondents with a secondary education focus mainly on the origin parameter of honey (66.3%). Respondents with a university degree focus more on price (25.5%) than those with secondary education (18.6%). Furthermore, the crystallisation of honey has a more significant influence on the decision of high school graduates (9.6%) than that of respondents with a university degree (5.2%). High school graduates also focus more on the type of honey than those with a university degree. The organic quality of honey was not important enough for either group.

Another study highlighted, that 77% of Czech consumers who buy honey at least once a year. The consumers who buy honey directly from beekeepers do so for two reasons. On the one hand, it has a more favourable price and they believe that they can enjoy benefits when buying from the producer. Honey purchased from the producer is safer, healthier (because sweetening with honey is healthier than sweetening with sugar), have less impact on environment and they can obtain information about the advantages of honey during the relationship with the producer (Zavodna & Pospisil, 2016).

In summary, Czech honey consumers are origin and price oriented. For buyers, the most critical parameter is the origin of honey (63.15%), followed by the price of honey (18.58%), then the crystallisation of honey (8.20%), the type of honey (6.19%) and finally the organic quality (3.88%). Suppose the buyer cannot taste the honey during the purchase. In that case, these parameters (especially origin and price) become even more critical when buying (Šánová et al., 2017; Zavodna & Pospisil, 2016). To sum up, the origin of honey is a particular factor that plays a role in honey purchasing in the Czech Republic.

Romania, Italy, Serbia

According to the survey by Ionita-Mindrican et al. (2022) in Romania (n=917), in terms of frequency of honey consumption, 33.6% of respondents said they consumed honey two to three times a week, 26.6% very rarely, 24% only once a week and 13.4% daily, while the proportion of non-honey consumers was 2.4%. 51% of the respondents do not consume other beekeeping products besides honey. Apart from honey, the most consumed bee products were propolis (44.2%) and royal jelly (29.2%) among the respondents. The most consumed types of honey by Romanian consumers are acacia honey (83.5%), mixed flower honey (81.9%) and linden honey (74.9%). Respondents mainly buy honey directly from the producer (87.1%) and least often from supermarkets (17.8%), organic shops (16.9%)

or pharmacies (6.9%). This may be due to a lack of confidence in the quality of the products sold in shops, given that honey is one of the most commonly counterfeited foods. 60% of respondents said they sometimes add honey to breakfast, snacks or soft drinks. Among drinks, honey is most often added to lemonade (84.2%) and tea (74.9%) and much less often to coffee (20.2%). 81.7% of respondents consider honey one of the healthiest sweeteners, and 95.7% trust its medicinal properties. 19.8% of the respondents used honey or bee products often for therapeutic purposes and 62.1% sometimes, mainly to strengthen the immune system and for respiratory diseases, with very few cases of wound healing. The primary sources of information on the beneficial therapeutic properties of honey were the Internet (53.7%), producers (38.6%) and health professionals (37.2%). When buying beekeeping products, Romanian consumers put more emphasis on quality (87.4%) and less on price or special offers. The quality of packaging was also considered, as 62.3% of respondents considered that packaging could affect the quality of beekeeping products, and 77.3% chose beekeeping products packaged in glass jars. Respondents intend to increase the consumption of honey and bee products (Ionita-Mîndrican et al., 2022).

The aim of the study by Ignjatijević et al. (2019) was to determine the factors influencing honey consumption, consumers' purchase intentions and consumer profiles in Romania (n=553), Italy (n=610) and Serbia (n=472). The frequency of honey consumption was similar in all three countries, with honey being the most frequently purchased product every month and every three months. The reasons for consuming honey are also similar, with the majority of respondents using honey that they like it and consider it a healthy food with health benefits. In all three countries, the majority paid between €5 and €10 per kg of honey, with 51.7% of respondents in Serbia, 70.2% in Italy and 69.6% in Romania. There is also a similarity in terms of the place of purchase. In Italy, 45.6% of respondents buy directly from producers and 34.6% buy honey from supermarkets. In Serbia, honey is mainly bought from producers (44.3%) and at markets (35.6%). In Romania, honey is also predominantly bought from producers (79.6%) and at fairs (10.5%). The most significant difference in consumption between the three countries is in terms of packaging. The research results in point to the fact that the strongest tendency of consumers from Serbia was to purchase a package of 1 kg (56.1%); 32% of the respondents bought a 500-g pack, while only 11.9% of the respondents bought a 250-g package. The research results indicated that the highest preference of consumers in Italy is towards purchasing 250-g packages (42.8%); 21% of the respondents buy the 1-kg package, while 36.4% buy a 500-g package. Based on the research results, a typical profile of honey consumers has been drawn up. In Italy, honey consumers are aged 30-49, highly educated, with an average income of €1,000-4,000. The participation of women as honey consumers is more significant due to the need to care for family members. Consumers prefer more miniature packs of honey and unique flavours such as eucalyptus, chestnut, citrus, traditional mixed flower honey and acacia honey. They are used to buying honey from producers. In Romania, honey consumers are 20-30 years old, highly educated, and with incomes of up to €1,000 per month. Women were also in the majority in terms of honey purchases.

Regarding preferences and purchasing habits, Romanian consumers buy honey in larger packages directly from producers, mainly acacia honey and mixed flower honey. Consumers have developed personal relationships with certain producers and buy large packs of honey, mainly mixed flower honey, acacia honey and linden honey. Finally, the research shows that education, income and family size are the main factors influencing consumer behaviour (Ignjatijević et al., 2019). Serbian consumers tend to be female, aged 20-39, highly educated, with an average income of €500-2,000.

Research from different countries shows that respondents from all countries prefer to consume honey in their daily diet (in tea, coffee, lemonade, and mixed with seeds) as a restorative and preventive measure. Respondents are aware of alternative uses and familiar with other beekeeping products (pollen, propolis, royal jelly). The most commonly consumed types of honey are acacia honey and mixed flower honey, rapeseed honey, and sunflower honey. However, several respondents also mentioned lesser-known types (e.g. eucalyptus honey, wild honey, citrus honey, chestnut honey). In addition to the taste, the participants in the survey also paid particular attention to the origin of the honey and the producer. They were less concerned about the price, packaging and appearance. Most respondents prefer packaging in kilo or half-kilo packs, except in Italy, where the 250-gram pack is the most consumed. On average, respondents buy honey between €5 and €10. Overall, the results of the questionnaires show that

respondents are aware of the positive effects of honey, consider its consumption beneficial from a health point of view and are primarily conscious of their honey consumption habits. When buying honey, the quality, taste, texture, variety, country of origin, producer, price, colour, smell, recommendations from family and friends, and purchase place are essential. In general, we can say that labels, design, advertising, the size and material of the packaging, and organic certification are not essential factors (Table 2 and Table 3).

Table 2: Honey consumption and purchasing habits – summary table I.

Aspects	Hungary	Poland	Slovakia	Czech Republic
% of consumer/buyer	<90%	~90%	~90%	77%
Form of consumption	into drinks, direct consumption, on bread, for cakes	in cakes, vegetarian dishes, desserts, with fruit/vegetable, drinks, itself	no data	sweetener
Most commonly consumed type	acacia, mixed flower, linden, rapeseed	multi-flower, linden, honey acacia	acacia	no data
Most important consideration when buying honey	quality, taste, reliability, produced conditions, domestic product	type, method of production, place of purchase	quality, country of origin, taste, type, price	the origin of honey, the price, crystallisation, type, the organic quality
Purchasing honey	producers, farmers' markets, at a gift	marketplace, producers, supermarket	producers, supermarkets, retail stores	producers
Reason for honey consumption	healthy sweetener, medicinal properties, health preservation	medicinal properties, health preservation	for the immune system, medicinal properties, prevent illness, anti-inflammatory properties, taste	bee products are healthy
Price of honey	5,33-8,80 EUR/kg	7-10 EUR/kg	7-10 EUR/kg	4,56 EUR/kg
Packaging	1 kg	1 kg	1 kg	no data
Source of information	Internet, from producers, fairs, farmers' markets	seasonal events, beekeepers, producers	beekeepers, producers	beekeepers, producers

Source: own estimates based on own questionnaire and other publication's data, 2023 (Oravec - Šedík 2023; Borowska, 2018; Kowalczyk et al., 2023; Hudecová et al., 2021; Šánová et al., 2017; Šedík et al., 2018; Zavodna – Pospisil, 2016)

Table 3: Honey consumption and purchasing habits – summary table II.

Aspects	Romania	Italy	Serbia
% of consumer	<90%	<70%	<90%
Form of consumption	breakfast, snacks, soft drinks, as healthy sweeteners	breakfast, sweetener of herbal teas, coffee or as an ingredient in cakes	sweetener
Most commonly consumed type	acacia, mixed flower, linden	eucalyptus, chestnut, citrus, mixed flower, acacia	acacia, mixed flower, linden

Most important consideration when buying honey	the quality, colour, taste, smell and consistency of the honey		
Purchasing honey	producers	producers, supermarkets	producers
Reason for honey consumption	likes, healthy, therapeutic purposes, strengthen the immune system		
Price of honey	5-10 EUR/kg		
Packaging	1 kg	250 g	1kg
Source of information	Internet, producers, health professionals	producers	producers

Source: own estimates based on Ionita-Mîndrican et al., 2022; Ignjatijević et al., 2018, Ignjatijević et al., 2019, Testa et al., 2019

As has been suggested for other sectors, there is a need for a long-term marketing strategy, an effective information campaign, a well-formulated advertising message, and consumer awareness so that advertising can also serve an educational function (Balogh, 2010). In order to increase honey consumption in Europe, we believe it would be worthwhile to develop a global "honey strategy" focusing on its beneficial physiological effects and promoting its consumption. This could be helped by programmes to promote honey consumption in various forums, by raising awareness of the ecological importance of bees and by reducing the counterfeiting of honey with the direct purchase of quality honey from producers.

Nowadays counterfeit honey is on the rise, so we consider it is very important that customers have the opportunity to buy honey of good quality and from safety environment, and producers can be the most helpful in this.

SUMMARY

Honey is a natural sweetener, and its ingredients have many health benefits. Increasing its consumption is also essential for some reasons, such as supporting the pollination activities of bees or stabilising the income-generating capacity of those involved in the beekeeping sector.

According to surveys in some European countries, the vast majority of people surveyed consume honey. In summary, the European honey consumer uses honey mainly to flavour drinks, cakes, fruit, and seeds, for breakfast, as a healthy sweetener and for direct consumption. It prefers acacia, linden and mixed flower kinds of honey. For a typical European honey consumer, the most important criteria when buying honey are the high quality, the variety and the right conditions under which it is produced. An essential factor for consumers is that the honey they buy comes from local beekeepers. On this basis, European honey consumers buy honey primarily from local beekeepers but sometimes from farmers' markets or supermarkets. Most people consume honey for its health benefits, to boost the immune system, to prevent illness and because they like the taste. The European honey consumer considers a price of €5-10 per kg of honey acceptable and mostly buys honey in 1 kg packages. Information on honey consumption is mainly obtained directly from the beekeeper or via the Internet. To this end, our research looked at how and in what direction honey consumption and purchasing habits have changed, comparing them with previous international and national surveys. Overall, honey consumption is steadily increasing in the countries surveyed. The percentage of people who do not consume honey at all can be low in all countries. In the case of each survey, more than half of the respondents buy honey directly from the producer. More than half of the respondents consider honey's health benefits and the importance of quality and pleasant taste. Non-price factors are, therefore, more important in purchasing and selection, similar to some countries in the region.

The results confirm that honey consumption has increased in recent years and that the respondents are becoming more conscious of their honey consumption and purchases. Some former misconceptions seem to have been challenged, but some remain (e.g. crystallisation). It is also important to note that our survey suggests that honey consumption should be promoted more widely and firmly in the future. Honey is a product of trust; the origin and source are essential, and it would be worthwhile to strengthen this to consumers as much as possible. For European honey consumers, it is crucial to have access to high-quality honey, as this is one of the most important considerations when buying honey.

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