

## Survey of consumer preferences on the bee product market. Part 1. Honey

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**Abstract:** *Survey of consumer preferences on the bee product market. Part 1. Honey.* The survey concerning the market consumer preferences of bee products was based on the internet anonymous questionnaire (517 persons). Over 95% of respondents declared honey consumption. More men than women eat honey. The quantity and frequency of honey use increases with age. As many as 70% of respondents sweeten using honey. The respondents choosing honey follow mainly the taste, individual properties of type of honeys, availability, price and appearance. Respondents the most willingly consume honey coming from Poland, and more than half of the respondents buy honey directly from a beekeeper. The most preferred are multi-flower, lime, acacia, buckwheat, honeydew and rapeseed honeys. A definitely higher percentage of respondents working in the sectors related to agriculture ate buckwheat, heather and dandelion honeys.

*Key words:* consumer preferences, honey

### INTRODUCTION

Honey, bee pollen, bee bread, bee glue, royal jelly, bee venom, and beeswax are bee products which are more often used in the human therapy (Giza 2004, Narkiewicz-Jodko 2014). It is connected to their antibacterial, cytostatic, and anti-inflammatory effect (Hołderna-Kędzia and Kędzia 2013, Hołderna-Kędzia and

Kędzia 2014, Premratanachai and Chanchao 2014). Their administration reduces the side effects of chemotherapy (Salles et al. 2014) and radiotherapy (Hołderna Kędzia and Kędzia 2015) and eliminates the problem of malnutrition during illness and convalescence (Koszowska et al. 2013). Consumption of bee products increases the body's immunity (Fratini et al. 2016).

The aim of the work was to examine consumer preferences on the bee products market. Evaluation of the knowledge of the properties of bee products and a declared willingness of their use by the respondents.

### MATERIAL AND METHODS

The research was carried out in 2018. The diagnostic poll methods was used in this work. The survey concerning the market consumer preferences of bee products was based on the Internet anonymous questionnaire. The questions concerned the respondent's living area, sex and age as well as preferences of bee products on the market. Questions concerning the bee products were divided on single and multiple choice questions. The survey was completed by 517 persons.

Among respondents 63% derived from Mazovian voivodship ( $N = 326$ ). The share of respondents from other voivodships was small and ranged from 2 to 4%. More than half of the respondents lived in big cities (100–500 thous. inhabitants) and people from cities with less than 100 thous. inhabitants were 21%. Rural areas were inhabited by 27% respondents.

There were 69% of women ( $N = 358$ ) and 31% men ( $N = 159$ ). Among respondents, the highest number of answers was given by people at the age of 18–24 (49%,  $N = 253$ ). At the age of 25–34, there were 26% of the respondents ( $N = 134$ ) and in the group from 35 to 44 years 11% ( $N = 57$ ). Definitely fewer answers were obtained from older people. In the age group above 44 years ( $N = 73$ ) there were 14% of respondents.

Most of the respondents obtained university diplomas (61%,  $N = 315$ ), 181 people completed grammar school (35%), and 21 respondents (4%) primary ones. Mostly the education or profession of the surveyed people was not related to agriculture (61%).

In the case of quantitative variables, the distribution of the variable is put in the tables containing measures of central tendency and dispersion. The significance of the correlation between variables of a nominal nature has been tested using the independence  $\chi^2$  test.

Correlations between rank and quantitative variables were checked using the Spearman's rank correlation coefficient ( $RS$ ). In the statistical analysis the significance level  $P = 0.05$  was assumed. The analyses were done using the SPSS Statistics 24.0.0 programme and the MS Office 2016.

## RESULTS AND DISCUSSION

Only 0.8% of the surveyed group people were allergic to bee products. Similar results were reported by Karakay (1999), who noticed the occurrence of allergy to honey in 0.7% of patients.

The honey consumption was declared by 95.7% of respondents. The frequency of honey consumption is shown in Figure 1. The obtained results are similar to those showed by Žak (2017) and higher than those reported by Gontarz et al. (2016) and Kowalczyk et al. (2017). Comparing the consumption of honey depending on the place of residence, it was found that when number of inhabitants was increasing the frequency of honey consumption decreased ( $RS = -0.087$ ,  $P = 0.049$ ). However, Gontarz et al. (2016), who conducted a survey among students, stated that honey was more often consumed by those who lived in a city than in the countryside. These differences may have resulted by the smaller number and the age of respondents.

Almost all men (98.1%) have consumed honey, and 94.7% among women. The difference in honey consumption depending on sex has been statistically significant ( $\chi^2 = 3.158$ ,  $P = 0.050$ ). The significant relationship between the age of respondents and the frequency of honey intake was found (Table).

Elder respondents declared honey consumption more often than young people ( $P < 0.001$ ). Along with the respondents' increase in the frequency of honey consumption the percentage of people using honey instead of sugar increased ( $P \leq 0.001$ ). Žak (2017) reports that 83% of Poles over 65 years of age consume 500 g of honey in a month.

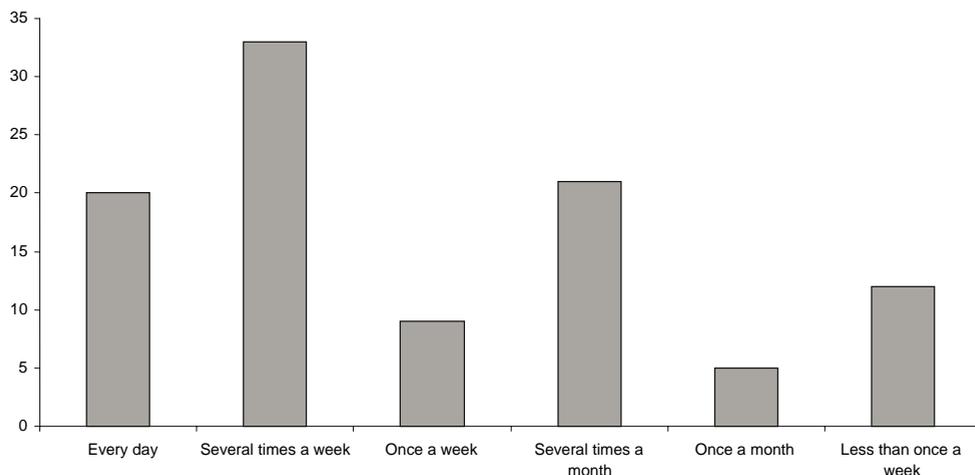


FIGURE 1. The frequency of honey consumption (%)

TABLE. The relationship between frequency of honey consumption and age

Question	Answer	Number and percentage	Age		
			18–24 years old	25–44 years old	above 44 years old
How often do you eat honey?	every day / several times a week	number	102	108	48
		horizontal (%)	39.5	41.9	18.6
		vertical (%)	43.2	57.1	71.6
	once a week / several times a month	number	78	55	12
		horizontal (%)	53.8	37.9	8.3
		vertical (%)	33.1	29.1	17.9
	once a month / less than once a month	number	56	26	7
		horizontal (%)	62.9	29.2	7.9
		vertical (%)	23.7	13.8	10.4
<i>RS</i> = 0.204; <i>P</i> < 0.001					

Analysing the consumer preferences of honey it was found that the respondents most often choice was multi-flower (84%) and lime (72%) honeys. Acacia (40%), buckwheat (40%), honeydew (39%) and rapeseed (31%) honeys were less readily bought (Fig. 2). Other authors confirm that multi-flower and lime honeys are the most popular among

Polish consumers (Giemza 2004, Kowalczyk et al. 2017). Żak (2017) reported that young consumers preferred bright honey, and older ones with a dark colour.

Education or work related to agriculture influenced the individual selection of types of honey ( $P \leq 0.05$ ). Definitely higher percentage of respondents whose

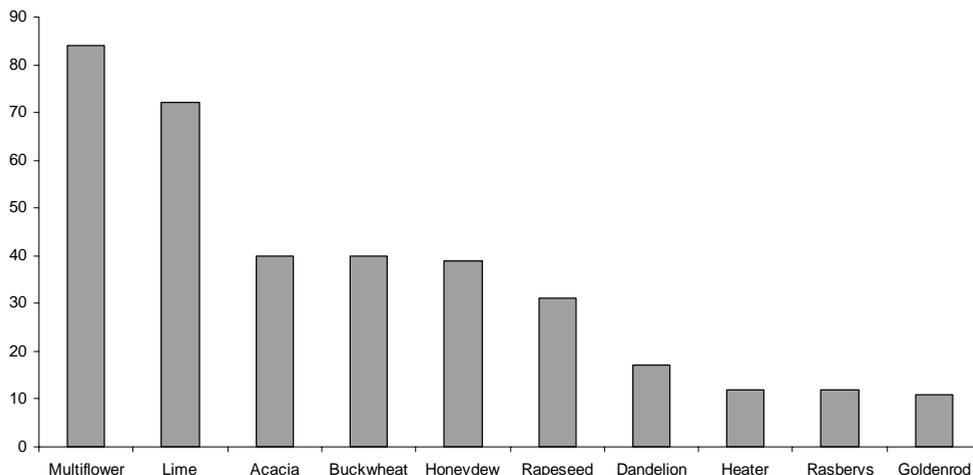


FIGURE 2. The type of honey chosen by consumers (%)

work have been related to agriculture have preferred buckwheat, heather, rape, acacia and dandelion honey.

When buying honey, the respondents pointed out: taste (72%), individual properties of types of honey (37%), availability (31%), price (31%) and appearance (29%). Among another factors determining the purchase of honey, the origin was most often mentioned. More than 58% of respondents was buying honey directly from a beekeeper, 24% on the market and 17% in the supermarket. A significantly smaller number of consumers purchased honey in beekeeping shops (7%) and with so-called “healthy food shops” (8%). Only 1.2% of respondents bought honey online. As many as 21% of respondents used honey from their own apiary. Żak (2017) reports that Poles over the age of 36 most often buy honey in the bazaar (22%) and directly from beekeepers (13%). According to Bratkowski et al. (2008) the respondents most often buy honey from a beekeeper (84.8%), valuing direct contact with the producer. How-

ever, according to studies by Kowalczyk et al. (2017) 32% of people buy honey in the bazaar and 27.4% of people in the apiary, and these are people over 45 years of age. About 20% of young Poles declare purchasing honey online (Żak 2017).

Poles definitely preferred domestic honey (89%). Only 9% of respondents chose honey from EU and non-EU Member States, while 9.8% of respondents did not pay any attention to the origin of honey.

## CONCLUSIONS

Honey is a widely used bee product, over 95% of respondents declared honey consumption.

More men than women eat honey. The quantity and frequency of honey use increases with age.

With the increase of honey frequency consumption the percentage of people using honey instead of sugar increases. As many as 70% of respondents sweeten using honey.

The respondents choosing honey follow mainly the taste, individual properties of type of honeys, availability, price and appearance.

Respondents the most willingly consume honey coming from Poland, and more than half of the respondents buy honey directly from a beekeeper.

The most preferred are multi-flower, lime, acacia, buckwheat, honeydew and rapeseed honeys.

A definitely higher percentage of respondents working in the sectors related to agriculture ate buckwheat, heather, rapeseed, acacia, and dandelion honeys. The most consumers prefer Polish honey bought in an apiary.

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**Streszczenie:** *Badanie preferencji konsumenckich na rynku produktów pszczelich, Część 1. Miód.* Celem pracy było zbadanie preferencji konsumenckich na rynku produktów pszczelich na podstawie 517 ankiet internetowych. Ponad 95% respondentów, a wśród nich więcej mężczyzn niż kobiet zadeklarowało konsumpcję miodu. Ilość i częstotliwość włączania miodu do swojej diety wzrastała wraz z wiekiem. Ponad 70% ankietowanych zastępowała cukier miodem. Wybierając

miód, większość osób kierowała się kolejno jego: smakiem, właściwościami, dostępnością, ceną i wyglądem. Konsumenci preferowali polskie miody, a połowa z nich kupowała miód bezpośrednio od pszczelarza. Największą popularnością cieszył się kolejno miód: wielokwiatowy, lipowy, akacjowy, rzepakowy oraz spadziowy. Zdecydowanie więcej respondentów pracujących w sektorach związanych z rolnictwem konsumowało miód gryczany, wrzosowy i z mniszka lekarskiego.

*Słowa kluczowe:* preferencje konsumenckie, miód

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