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CONSUMER BEHAVIOUR AND SENSORY TESTING OF HONEY BY ROMANIAN UNIVERSITY STUDENTS

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Abstract

Honey consumption has started to increase in recent years in Romania, according to statistics. In this context, the main objective of the paper was to study consumer behaviour and sensory perception of honey by Romanian young segment. The research was based on blind sensory testing of two honey samples (one commercial sample with country of origin indicated as "Blend of EU and non-EU honeys" and one from a local Romanian beekeeper). The sensory analysis was complemented with a questionnaire survey. In total, 100 university students from Cluj region participated. The results showed that the majority of participants consume honey only occasionally and their annual consumption is lower than 1 kg. Honey is mostly used as sweetener in beverages (tea, lemonades). The most preferred type of honey is acacia, followed by linden honey. Sensory testing showed that young people perceived the quality of honey and their preference by using mostly the taste. In addition, interesting results were acquired by respondents which decision was based also on aroma. Almost 83% of them indicated preference for honey from Romanian beekeeper.

Key words**:** *honey consumers, sensory attributes, youth, Romania*

INTRODUCTION

Nowadays, consumers are aware of the need to choose quality foods regarding their nutritional value and positive health effects due to changes in consumers' lifestyles and eating habits [4, 8, 10]. The mentioned can be considered a relatively new trend in the food market, in which the honey consumption is undoubtedly included [3, 16].

Honey has become more preferred among consumers in recent years and its consumption is constantly increasing [6]. This may be justified in particular by the fact that honey can be considered a complex food due to its significant nutritional value and biological variability. In addition, honey contains many vitamins, minerals, enzymes, amino acids as well as antioxidant compounds [2, 24, 37, 11].

The importance of honey is also growing mainly due to its perception as a natural sweetener and is accepted as a healthy alternative to sugar. Beside of the using honey as a food, honey also has other antimicrobial and medicinal properties. Honey is most often used to treat skin problems, but it also has anti-inflammatory, immune boosting property. Moreover, honey prevents and treats gastrointestinal disorders and poses prebiotic effects and promotes health of gastrointestinal tract [1, 14, 30, 38].

Furthermore, honey can also be used in apitherapy, which is an important part of complementary and alternative medicine [36, 32]. Honey, as well as other bee products such as propolis, bee venom, bee pollen, are commonly used in pharmacy as nutritional supplements or drug ingredients [16, 12]. Furthermore, honey, beeswax, bee pollen, propolis, royal jelly or bee venom can also be added to cosmetic products, which are increasingly used by consumers due to their exceptional effects on health and beauty [7, 15].

However, based on the mentioned properties of honey and the positive effects on health, honey is most often used and consumed primarily as food or an ingredient in various food recipes [5]. To support and increase

honey consumption, nutritional marketing tools are used and they consist of principles 5N, namely nutritive qualities, nutritive quality, nutritive benefits, nutritive strategy and nutritive integration. Honey is considered a nutritious product and is very suitable for nutrition marketing applications. Analysis of nutritive qualities in honey and nutritive quality of honey (principles 1N and 2N) relate to the composition of honey and the qualitative aspects of honey. As mentioned above, honey contains important nutrients and is composed of 70 different substances, such as carbohydrates, enzymes, organic acids, amino acids, minerals, vitamins and so on [9]. Furthermore, honey is classified as a product with high energy and nutritional value. These components emphasize the nutritional quality of honey as a key aspect determining consumers when buying and consuming honey as a safe and good-quality food. Principle 3N (nutritive benefits of honey) represents the medical effects of honey, which is based on its antibacterial properties as well as the overall composition of honey. Due to its health benefits, it is suitable for daily consumption for all age groups of consumers [9]. However, its consumption is especially recommended in the diet of children, sportsmen, but also adults who work a difficult physical or mental job. The following principle 4N (nutritive strategy of honey) deals with the analysis of the competitive environment regarding the healthy food sector. It focuses on new ways of emphasizing nutritional properties, as well as emphasizing the importance of the relationship between companies' marketing campaigns and the healthy food industry [9].

The last principle 5N represents the principle of nutritional integration based on the exchange of ideas, opinions and innovations related to honey and its quality at the international level. In addition, the application of effective marketing and promotion processes aimed at honey production, composition and quality as key aspects for the consumer is an integral part of this principle. In this context, it is desirable to organize seminars, workshops and lectures focused on the sector of healthy food and its nutritional properties [9].

Even though interest in honey is constantly growing, younger consumers are indifferent towards honey [5] and in several countries there was founded a lower consumption of honey by the younger consumers compared to the older ones. [20] and [22] state that in Romania, young consumers aged 18 to 30 and the middle generation of consumers aged 31 to 45 are medium frequency consumers compared to the older generation of consumers aged 46 to 60, who have a higher frequency of honey consumption. Furthermore, [10] identified similar consumer behaviour of the young generation based on the conducted survey in Russia and Slovakia. They state that the annual consumption of honey by the younger generation of consumers is at a lower level compared to the older generations. Further research conducted by [27] in the Czech Republic showed that young consumers do not prefer to consume honey and it is therefore necessary in the future to focus on the youngest age group and emphasize the importance of honey consumption, its composition and quality in terms of the concept of nutrition marketing. [19], who examined consumer behaviour in Poland, emphasizes the need to advertise honey among young people because of low honey consumption by this social group. In this context, it is therefore possible to increase honey consumption among this generation of consumers by educating consumers to a healthy lifestyle [21].

In this context, the purpose of this study is to identify consumer behaviour of young honey consumers in Romania as well as to understand their perception of honey quality based on its intrinsic attributes.

MATERIALS AND METHODS

Research design is based on primary data obtained by conducting sensory blind testing complemented with questionnaire survey. The research was conducted in 2021 and 100 respondents participated.

In sensory blind testing, respondents evaluated two samples of honey (sample A

was purchased directly from Romanian beekeeper and sample B was purchased in selected supermarket with country of origin indicated as "Blend of EU and non-EU honeys"). Respondents evaluated intrinsic attributes such as taste, colour, aroma and consistency without knowing any extrinsic attributes (price, brand, producer, label…). Evaluation was performed by applying 5-points scale. Afterwards, respondents were asked which sample they preferred more and based on which attributes they have decided. The similar research design was applied in Slovak honey market [28].

Questionnaire survey included mostly closed questions regarding honey consumption patterns, purchasing behaviour, consumer preference and consumer perception of honey as healthy food. The research sample included university students from Cluj region both males (68) and females (32). Respondents represented young segment (18 – 24 years), living in urban areas (57) with monthly net income less than 1,800 lei.

Results were analysed by using descriptive statistics and non-parametric tests such as Fisher's Exact Test, Friedman's test, Chi-square test of independence, Wilcoxon signed-rank test and Nemenyi's procedure. Data were processed by using Xlstat.

RESULTS AND DISCUSSIONS

Sensory blind testing revealed that honey purchased directly from Romanian beekeepers obtained better evaluation in all examined intrinsic attributes (Figure 1). In addition, by applying Wilcoxon signed-rank test were identified statistically significant differences in terms of taste (p-value = 0.000), aroma (p-value = 0.000) and consistency (p-value = 0.000). Colour was evaluated in similar way. However, only 59 respondents indicated preferences for honey from beekeeper (sample A) and 60 identified it as sample from beekeeper. Respondents mostly decided based on taste (88) and aroma (48). Aroma and taste are more dominant in case of honey purchased directly from beekeeper [26]. Interesting results were obtained by analysing only respondents who decided their preference based on aroma. Approximately 83% indicated preferences for domestic honey (sample A).

Furthermore, the influence of gender and place of residence on indication of preference was examined by Fisher's Exact Test. Results showed that there does not exist any statistically significant dependency both in case of gender (p-value = 0.568) and place of residence (p-value = 0.483).

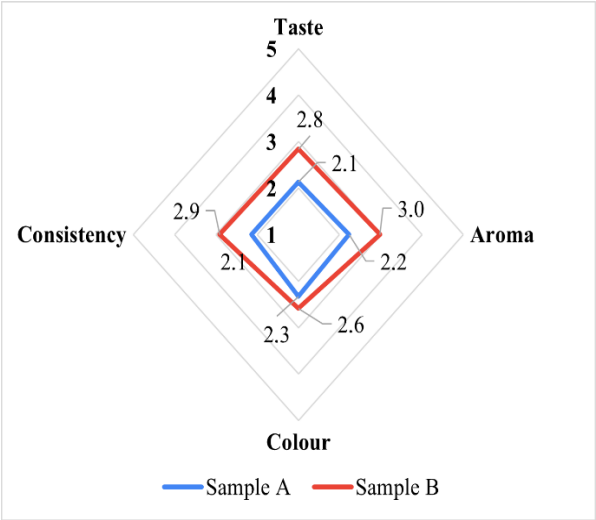

Fig. 1. Results of blind sensory testing
Source: own calculation.

The similar study was conducted in Slovakia with generation Z and generation Y. Results showed that young honey consumers were confused in sensory blind testing and only 53% indicated preference for local Slovak honey. Moreover, respondents who decided based on aroma attribute (>90%) identified local honey from Slovak beekeeper [28]. These results are in line with our study. Sensory testing in consumer research generates essential information towards consumer´s perception of product including its quality which provides important tool used for product policy development [34, 33].

Results of questionnaire survey identified profile of young segment in terms of consumer behaviour on honey market in Romania. It can be stated that honey is consumed both as food (92) and medicine (54) and only occasionally (36) or once a week/month (40). The majority of them indicated annual consumption of honey lower than 1 kilogram (77). The similar results were

acquired in case of Hungarian honey consumers who consume this product only few times per year or monthly [35]. Honey is mostly consumed during the winter period (66) as a sweetener to beverages such tea or coffee (40) in the morning (41) or in the evening (32). Despite the honey is mostly consumed by the whole family (64), annual consumption in family was indicated only up to 2 kilograms (58). Moreover, 58 answered that honey consumed on regular bases during their childhood. Chi-square test of independence confirmed dependency between consumption of honey in childhood and current annual consumption (p-value = 0.000). It can be stated that respondents who indicated regular consumption of honey in their childhood consume higher amounts of honey in their adulthood (Figure 2).

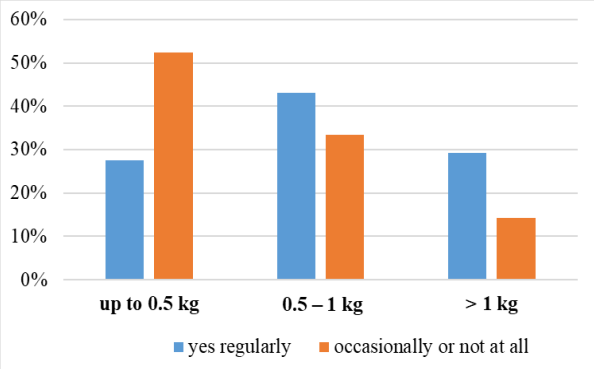

Fig. 2. Dependency between honey consumption in childhood and current annual consumption
Source: Own calculation.

Even though, honey is consumed by all respondents, only 45 purchased it. The rest of them stated that honey is purchased by other family member or is received as a gift. Honey is purchase if necessary (21) or once in 3 months (14). Moreover, respondents indicated that they mostly prefer 1 kilogram packaging (720 ml) as well as it represents the common amount of honey bought per one purchase. The most preferred packaging material is glass.

Respondents also evaluated selected factors which are considered during the purchase of honey. It was assumed, that there will exist certain differences in the level of importance among these factors. Friedman´s test confirmed these statistically significant differences (Table 1).

Table 1. Friedman's test

Q (Observed value)	**307,918**
Q (Critical value)	12,592
DF	6
p-value (one-tailed)	<0,0001
Alpha	0,050

Source: Own calculation.

Furthermore, a post hoc test Nemenyi's procedure were applied for multiple pairwise comparisons. Results showed that young university students perceived quality and honey taste as the most important factors during purchase (Figure 3). While honey labelling was evaluated as the least important factor. Price obtained the similar evaluation as country of origin and consistency. The optimal prices for this segment were stipulated between 24-27 lei per kilogram (53) or 28 – 45 lei (32). Study conducted by [29] reflected that generation Z (18-24 years) perceived the importance of those factors in similar way. Based on obtained evaluation, honey quality, its taste and country of origin created latent factor entitled as "factor of overall quality". Another consumer study conducted in Hungary proved that region of origin, brand and certification are important however, country of origin was evaluated with higher importance [18].

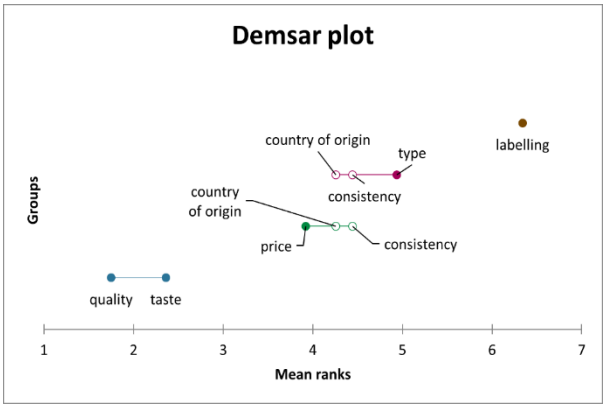

Fig. 3. Resulted groups from the Nemeny's pairwise procedure in Demsar plot.
Source: Own calculation.

However, consumer research in Ireland identified price and texture as the essential attributes of honey. Colour was evaluated as

the least important attribute [17]. According to [13], Romanian honey consumers pay a very low attention to honey labelling especially to energy content. However, when honey is purchased in bulk, the quality of honey is based more on intrinsic attributes such as aroma, taste, thickness, and colour). Extrinsic attributes such as brand, warranties or country of origin are less important.

Honey is mostly purchased from beekeeper or from farmer markets. Purchase directly from beekeeper is the most common form of purchase both in Slovakia and Czech Republic [29, 25]. In terms of honey preference, respondents prefer in average honey of light colour (2.60), aromatic (1.99), liquid consistency (2.27), floral origin (2.23), domestic origin (1.78) purchased from beekeeper (1.69) and produced in conventional beekeeping (2.28). Preferences for honey price was indicated as indifferent. Acacia honey is the most preferred honey in Romania (68) followed by linden honey (26). Honeydew honey is not known among this segment (47), or they have neutral preference (37). Creamed consistence of honey is mostly not known among this segment (78). Regarding the honey with additions, it can be stated this segment stipulated preference for honey with nuts, bee pollen, honey with piece of honeycomb and honey with cinnamon. Honey with chilli, poppy and ginger was evaluated as not so attractive. The optimal price for 250 grams of honey with addition was determined as less than 23 lei (37) or between 24 – 27 lei (36).

The similar study was conducted by [31] where authors studied perception of young consumers between 18 – 24 years towards honey enriched with cocoa powder.

Results showed that this product was perceived as natural, innovative and the majority of young honey consumers would purchase it.

The optimal price was stipulated from 2 – 3 euros or even higher. In addition, it can be stated that most of the respondents thinks that honey possess healing effects and increases its consumption during illness period. The opinion towards honey being healthier than sugar was indicated by 90 respondents. Nevertheless, honey is used as alternative to sugar by majority only sometimes (68). The aforementioned is in line with previous research focused on young Romanian consumers between 18 – 30 years [23].

CONCLUSIONS

Acquired results provide important insight into consumer behaviour of Romanian generation Z towards honey. It can be concluded that this segment consumes low quantity of honey mostly during winter period in beverages as alternative sweetener to sugar. Honey is used both as food and medicine.

The most preferred honey is light aromatic honey in liquid form. Acacia honey is the most preferred monofloral honey.

The most important factors during purchase of honey are its quality and taste.

Honey is mostly purchased directly from beekeepers in glass packaging.

The optimal price per kilogram ranges from 24 – 27 lei.

Results of this study may serve as fundamental basis for producers to create effective product and communication policy as well as better product positioning aimed on young segment in Romanian honey market.

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