

DETERMINATION OF CONSUMERS' CONSUMPTION LEVELS AND HABITS FOR BEE PRODUCTS: A CASE STUDY OF ISPARTA PROVINCE, TURKEY

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Abstract

In the study, it was aimed to determine consumers' consumption levels and habits for bee products in urban areas of Isparta province in Turkey. The main material of the study consisted of the data obtained from surveys, which were conducted by face-to-face interviews with 246 consumers in Isparta city centre. As a result of the research, it was determined that 79.27% of the surveyed consumers consumed bee products and mainly preferred extracted flower honey (45.13%) and comb honey (30.26%). The annual honey consumption was calculated as 1.94 kg and the honey consumption per capita increased when the consumers' income groups rose. It was identified that the vast majority of the surveyed consumers purchased honey and other bee products from supermarkets and directly from the producers. The majority of consumers preferred glass jars in purchasing honey as packaging and 41.03% of them did not read the label on the package. Consumers stated that 46.70% of them cared about the brand while purchasing honey and other bee products. When the consumers' information sources were examined, it was seen that 60% of them obtained information from the television. It was also determined that 11.28% of the interviewed consumers consumed other bee products (pollen, propolis, etc.). It was found that consumers consumed the bee products except honey more with the aim of better health. It was concluded that the consumption of the other bee products except honey was insufficient and therefore promotion activities should be focused to increase the consumption of these products.

Key words: bee products, consumer behaviour, consumption level

Using herbal resources, bee and labour together, beekeeping is the activity of producing live materials such as queen, clusters, package bees that are important income elements in beekeeping nowadays. It is also the activity producing honey, pollen, royal jelly, propolis and bee venom used for nutrition, health care and treatment since the time of human existence (Firatli C. *et al*, 2000). Beekeeping is an area of agricultural activity all over the world due to its many characteristics, such as the contributions of bees to the plant production by pollination, the increasing demand for natural products, and being able to make it without ground dependent using less capital and input (Gurel F. and Gosterit A., 2004). Also, beekeeping, both in developed and developing countries, is an important production line for various purposes. It is usually a traditional occupation in Europe, a means of boosting rural income in countries such as Spain, Poland, Hungary, Greece and Turkey, a major source of external revenue in the Far East, Central and South America, and mainly to use in pulverization in plant production in the USA, Canada and Japan. Especially in the USA, it is

estimated that the contribution of beekeeping to the national economy is 10 times more than its own products. Also, it is stated that the value of products requiring bee pollination in the USA is worth \$ 24 billion and the total value of the products for which pulverization is carried out for commercial purposes is \$ 10 billion (Firatli C. *et al*, 2000).

Products such as honey, beeswax, royal jelly, pollen, bee venom and propolis obtained as a result of beekeeping activities have an important place in everyday life and trade because it is very valuable in terms of human health (Monte *et al*, 2013). Bee products are widely used in pharmaceutical, food, cosmetic and beverage industries in the treatment and improvement of various diseases as well as consumption for nutrition purposes in many countries such as China, Japan, New Zealand, Poland and Hungary. In this respect, it shows a potential for development by creating a separate sector for each product with an increasing pace in each passing day. While "*apitherapy*", the medical use of bee products that honeybees collect from nature, has

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application field in many regions of the world, the use of bee products such as pollen, royal jelly, bee venom and propolis are inadequate for this purpose in Turkey. It is seen that production, consumption and trade are insufficient in bee products apart from honey, as the main purpose of consuming bee products cannot go beyond nutrition in Turkey. For this reason, it is necessary to focus on raising awareness and determining potential of producers, consumers and commercial investors in these issues (Kumova U. and Korkmaz A., 1999).

Beeswax production is 64 688 tons and honey production is 1 592 701 tons, and China is ranked number one in producing honey in the world in 2012 (FAO, 2016). Turkey has an important beekeeping potential in terms of having suitable ecology, rich vegetation and different climate zones (Gosterit A. and Gurel F., 2004). According to 2014 data, colony presence is 6 867 531 units and honey production is 102 486 tons in Turkey (TUIK, 2016). In the world Turkey is among the countries where beekeeping is strong, as a matter of fact, Turkey is the second in terms of honey production and the third in terms of the number of colonies (FAO, 2016).

While the honey consumption per capita in Turkey was 0.92 kg in 2000, it reached 1.3 kg as showing an increase of 41% in 2011. According to 2011 data, the annual honey consumption per capita is 0.7 kg in the EU, 0.7 kg in the USA and its world average is 0.2 kg (FAO, 2016). In the light of the data, it is seen that the annual honey consumption per capita in Turkey is above the EU, the USA and the world average.

The main objective of this study is to determine consumer patterns, trends and purchasing behaviours of bee products in Isparta province. For this purpose, the features such as demographic characteristics of the consumers, the bee products purchased, consumption and spending levels of bee products, reasons for purchasing bee products, purchasing frequency, purchasing points and features to be considered when buying bee products were determined in the study. It is thought that this study will significantly contribute to the literature and at the same time create a data source for the firms operating in this sector in decision making in certain issues such as investment, product diversification and development due to the limited number of studies examining consumer demand and consumer behaviour for bee products in Turkey.

MATERIAL AND METHOD

The main material of the study consisted of the data obtained from surveys, which were conducted by face-to-face interviews with 246 families selected by

sampling method in Isparta city centre. It was also benefited from various research results, reports and existing statistical data on the subject. Survey studies of the research were conducted between November and December 2015. The study was carried out in the city centre of Isparta in the Western Mediterranean Region in Turkey. Isparta province is the centre of the Lake District and its area is 8933 km². The total population is 421 766 and the central population is 235 456. Isparta province is 120 km away from Turkey's tourism city, Antalya (TUIK, 2016).

The method "Non-clustered single stage simple random probability sampling based on the population" specified in Equation 1 has been used in determining the number of families to be surveyed (Collins M., 1986).

$$N = t^2 (p \cdot q) / e^2 \quad (1)$$

where

- t: the value of the t-table corresponding to the 95% significance level (1.96)
- p: probability of occurrence of the event (0.80) (the proportion of consumers consuming bee products in this study)
- q: probability of absence of the event (0.20)
- e: the accepted error rate in the sample (5%).

As a result of the calculation using Equation 1, the number of samples is calculated as 246. After the number of samples was determined in the study, three groups were separated as low, medium and high income according to the socio-economic characteristics of the total neighbourhoods in the city centre of Isparta and the survey study were conducted in 15 neighbourhoods that could represent the research area. The number of questionnaires to be made from each neighbourhood was distributed in proportion to the population of the neighbourhoods and the families were randomly selected. The data obtained from the consumers will be analysed in MS Excel and SPSS programs and tables will be created, and these tables will be interpreted using simple and weighted average methods, and absolute and relative distributions.

RESULTS AND DISCUSSIONS

Socio-economic Characteristics of Consumer

It is determined that 56.50% of the interviewed consumers are female, 43.50% of them are male, and the average age of both female and male consumers are about 44. It is estimated that 85.37% of the consumers are married and 14.63% of them are single. The average population per family is identified as 3.14. When the educational status of the consumers is examined, it is determined that university graduates are the first (36.59%). It is followed by primary school (27.64%) and high school (25.20%) graduates. Also, 63.41% of the interviewed consumers work and 36.59% of them do not. When the distribution

of the consumers according to the occupational groups are examined, it is determined that 26.42% of the consumers are housewives, 23.98% of them are civil servants, 20.33% are workers, 19.11% are artisans and 10.16% are retired. When the distribution of the consumers by monthly income groups is examined, it is determined that 47.97% of them are in the monthly income group of 1501-3000 TL, 30.08% of them are located 1500 TL and below, and 21.95% of them are above 3000 TL. It is determined that the consumers interviewed are generally in middle-income group.

Consumers' Honey and Other Bee Products Consumption Status

It is determined that 79.27% of the consumers interviewed in the urban area of Isparta consume bee products and 20.73% of them do not. The reasons why consumers do not consume bee products are given in Table 1. Diabetes (35.29%) comes in the first place among the reasons why consumers do not consume the bee products, and it is followed by the reason dislike (33.33%).

Table 1

Consumers' reasons not to consume bee products		
Reasons	N	%
Diabetes	18	35.29
Dislike	17	33.33
Being expensive	5	9.80
Disbelief	5	9.80
Someone else not consume in the family	3	5.88
Allergy	3	5.88
Total	51	100.00

The honey varieties preferred by consumers consuming bee products are given in Table 2. It is determined that the interviewed consumers mainly prefer extracted flower honey (45.13%) and comb honey (30.26%). The preference ratio for these two types of honey is approximately 75%. In other studies, conducted in different regions in Turkey, it was found that extracted flower honey was mostly preferred. In the study conducted in Izmir

province, it was found that 45.75% of the consumers preferred extracted flower honey, 16.34% of them chose honeydew honey and 16.34% of them preferred both honeydew and extracted flower honey (Saner G. *et al*, 2011). In another study of honey consumption trends in Istanbul province, it was determined that consumers consumed extracted flower honey (85.33%), honeydew honey (14.67%) and both (1.33%) (Paydas M., 1999).

Table 2

Consumers' honey variety preference		
Honey varieties	N	%
Extracted pine honey	19	9.74
Extracted flower honey	88	45.13
Comb honey	59	30.26
Pine+flower honey	19	9.74
Flower+comb honey	7	3.59
Pine+flower+comb honey	3	1.54
Total	195	100.00

Annual honey consumption according to the income groups of the surveyed consumers is given in Table 3. It is identified that annual honey consumption per capita increases as consumer income groups grow. As a matter of fact, average annual honey consumption per capita in ≤1500 TL, 1501-3000 TL and 3001+ TL income groups is 1.72, 1.87 and 2.37 kg respectively. It is seen that the annual honey consumption per capita is 1.94 kg when the average of all groups is taken into consideration. The average honey consumption per person in Isparta province was found to be higher than Turkey's average (1.3 kg), the EU average (0.7 kg), the USA average (0.6 kg) and the world average (0.2 kg) (FAO, 2016). In the study conducted in Tokat province, the annual honey consumption per capita was determined as 4.29 kg while it was found 1.22 kg in the study applied in Izmir province (Sayili M., 2012; Saner G. *et al*, 2011).

Table 3

Consumers' annual honey consumption			
Income groups (TL/month)	Extracted honey consumption (kg/person/year)	Comb honey consumption (kg/person/year)	Total (kg/person/year)
≤1500	1.08	0.64	1.72
1501-3000	1.07	0.80	1.87
3001+	1.41	0.96	2.37
Average	1.15	0.79	1.94

Expenditures of bee products according to monthly income groups of consumers are given in Table 4. It is found that the consumption of bee products increases as the monthly income groups

of consumers increase. Average monthly bee products consumption of the consumers in ≤1500 TL, 1501-3000 TL and 3001+ TL income groups is 5.04, 5.50 and 13.15 TL respectively. It is

determined that the monthly bee products consumption per capita is 7.04 TL as the average of all groups.

Table 4

Consumers' bee products expenditure		
Income groups (TL/month)	Average income (TL/month)	Bee products expenditure (TL/month)
≤1500	1170.14	5.04
1501-3000	2363.90	5.50
3001+	4709.44	13.15
Average	2519.67	7.04

When the purchasing frequency of the consumers is examined, it is determined that 41.54% of the consumers purchase honey twice a year, 28.72% of them once in a year, 27.69% in every three months and 2.05% once in a month. The consumers who purchase honey once a month and once every three months stated that they consume honey very often (table 5). In a study conducted in Turkey, Boluktepe F.E. and Yilmaz S., (2008) found that a large majority of the interviewed consumers bought honey every two or six months.

Table 5

Consumers' honey purchasing frequency		
Purchasing frequency	N	%
Once in a month	4	2.05
Quarterly	54	27.69
Twice a year	81	41.54
Once a year	56	28.72
Total	195	100.00

Places where consumers buy honey and other bee products are given in Table 6. The majority of surveyed consumers indicated that they preferred supermarkets and producers as purchasing places for honey and other bee products. It is identified that the rate of consumers who prefer supermarkets is 45.13% and the rate of consumers choosing direct producers is 37.95%. The reason why consumers choose to buy honey and other bee products directly from the producers is to trust the seller. While the proportion of those who prefer to buy honey and other bee products from the neighbourhood markets is 13.85%, the preference rate of private shops is 2.05% and the ratio of those preferring to purchase from cooperatives is 1.03%. In a study conducted in Turkey, 51.2% of the consumers stated that they bought honey from the beekeepers they knew, 41% of them purchased from markets and bazaars, and 7.8% of them bought it by ordering via Internet and television (Tunca R.I. *et al*, 2015). In the study conducted in the province of Tokat, it was determined that the place where bee products were most purchased was the beekeepers (85.71%)

(Sayili M., 2012). In addition, in a survey conducted in Istanbul, it was seen that 43.8% of the consumers bought honey from supermarkets while 14.4% of them bought from groceries and small markets (Paydas, M., 1999).

Table 6

Consumers' purchasing places of honey and other bee products		
Purchasing place	N	%
Supermarket	88	45.13
Private shop	4	2.05
Neighbourhood market	27	13.85
Cooperative	2	1.03
Producer	74	37.95
Total	195	100.00

Consumers stated that 46.70% of them cared about the brand while purchasing honey and other bee products and %53.30 of them did not. It is found that the vast majority of consumers who do not give importance to the brand are the honey buyers purchasing directly from the producer. It is thought the recent poor quality honey advertisements are also effective in this situation. In a study in Turkey, 49.6% of the consumers preferred to buy only branded honey, 42.9% of them preferred to buy both branded and unbranded local honey, and 7.5% of them chose to purchase only unbranded local honey (Boluktepe F.E. and Yilmaz S., 2006). In another study in Turkey, the ratio of consumers who paid attention to the brand was 52.7% while buying honey (Tunca R.I. *et al*. 2015).

The features that the consumers pay attention to while purchasing honey were evaluated using a five-point Likert scale according to significance level and the results are given in Table 7. It is determined that consumers are most interested in the expiry date while purchasing honey (4.29). The expiry date is followed by the purchasing place of honey (4.14), brand (4.12), variety (4.03), non-crystallization (4.02), honey colour (4.01), product packaging (3.88) and the product price (3.62) respectively. These results show that consumers behave consciously while buying honey. In the study conducted in Tokat province, the price, smell, appearance/colour, packaging condition, the place where bee makes honey and nectar status are important factors while bee products are purchased. The taste of the product, the quality, the additives in the product, manufacturer's name/brand and the reliability of the product in terms of health are very important factors (Sayili M., 2012).

Table 7

The characteristics that the consumers consider when purchasing honey

Features	Important level (%)					Level*
	1	2	3	4	5	
Price	5.09	15.61	8.23	54.79	16.28	3.62
Brand	0.59	5.05	9.59	51.23	33.54	4.12
Colour	0.54	6.36	12.59	53.10	27.41	4.01
Packaging	0.74	9.41	13.36	54.77	21.72	3.88
Non-crystallization	0.98	6.61	9.61	54.49	28.31	4.02
Variety	0.56	5.18	13.03	53.48	27.75	4.03
Purchasing places	1.11	3.05	9.52	52.98	33.34	4.14
Expiry date	0.54	1.51	3.27	55.84	38.84	4.29

* 1: very insignificant, 2: insignificant, 3: Uncertain, 4: significant, 5: very significant

Packaging preference is very important in terms of health and hygiene when buying honey. In a study conducted in Turkey, it was stated that packaging was very important among consumers (67%) (Tunca R.I. *et al.*, 2015). The types of packaging preferred by the interviewed consumers in purchasing honey are presented in Table 8. As it can be seen from the table, consumers prefer glass jars of 850 gr (26.15%) in the first place, and followed by 2-4 kg honeycomb slat (25.13%), 450-500 gr glass jar (16.41%) and 1 kg tin (14.87%) packages, respectively. It was determined that the interviewed consumers mainly preferred glass jars. The reason why glass jars were preferred more is that these packages are healthier and more hygienic. In a study in Istanbul, the majority of consumers preferred nearly one kg glass jars when purchasing honey (Gungor H. and Paydas M., 2000). In a study applied in Izmir, it was found that 46.30% of the consumers preferred glass jars of 850 gr and about 30% of them preferred glass jars of 450-500 gr (Saner G. *et al.*, 2011). In another study conducted in Tokat province, consumers considered packaging (77.94%) and preferred glass jars (75.74%) as packaging while purchasing bee products (Sayili M., 2012).

Table 8

Consumers' packaging preferences when purchasing honey

Type of packaging	N	%
2 kg tin	9	4.62
1 kg tin	29	14.87
850 gr glass jar	51	26.15
450-500 gr glass jar	32	16.41
250 gr glass jar	6	3.08
2-4 kg honeycomb	49	25.13
400-500 gr plastic packaging	9	4.62
850 gr glass jar+2-4 kg honeycomb	4	2.05
850 gr glass jar+400-500 gr plastic packaging	4	2.05
2 kg tin+2-4 kg honeycomb	2	1.03
Total	195	100.00

When it is examined the status of label reading on the package by the interviewed consumers before buying bee products, 58.97% of them do not read the label and 41.03% of them read it.

The information sources of consumers for honey are given in Table 9. The interviewed consumers stated that they were informed from television programs (60%), the people in their surroundings (50.77%) and Internet (27.18%). It is determined that consumers who obtain information from the Internet are mostly young and middle-aged with high educational level. In the study conducted in Izmir province, it was found that the information sources of consumers were largely TV programs (Saner G., *et al.* 2011). For this reason, it should be noted that TV programs for honey contain useful information for consumers while preparing them.

Table 9

Consumers' information sources for honey

Information sources	N	%
Television programs	117	60.00
Radio programs	3	1.54
Doctor and/or experts	16	8.21
Articles in journals, newspapers	18	9.23
Hearing from others	99	50.77
Internet	53	27.18

*Percentages are higher than 100, because of multiple choose.

When the advertisement tracking status of consumers related to bee products are examined, 56.41% of them say that they watch advertisements and 43.59% of them do not. Positive advertisements about the promotion of bee products have a positive effect on consumption of bee products. Indeed, it was determined that advertisements affected the use of bee products in a study conducted in Turkey (Tunca R.I. *et al.* 2015).

While 11.28% of the interviewed consumers indicated that they consumed other bee products (pollen, propolis and royal jelly etc.), 88.72% of them stated that they did not consume these products. The low consumption of other bee products except honey may be due to the fact that these products are used to treat many diseases with natural methods, not as food in public. When the consumers' purpose of consuming other bee products except honey is examined, it is determined that 40.91% of the consumers use them for health, 31.82% of them use the products to increase body resistance and 27.27% of them for child health. In the study in Tokat, it was

determined that the percentage of consumers consuming pollen from other bee products was 2.57. It was determined that the consumption of other bee products except honey was low in the study in Adana and Mersin provinces (Kumova U. and Korkmaz A., 1999). In another study conducted in Turkey, it was found that honey had an awareness of 99.4% while pollen had 61.6%. They were followed by royal jelly (52.8%), beeswax (46.4%), bee venom (16.3%) and propolis (8.9%), respectively. These findings indicate that the level of consumption of other bee products except honey is low. For this reason, it is necessary to introduce honey and other bee products to consumers sufficiently.

CONCLUSIONS

In the urban area of Isparta province, 79.27% of the interviewers consume bee products in the study conducted with the aim of determining consumers' consumption levels and habits for bee products. It is determined that the interviewed consumers mainly prefer extracted flower honey (45.13%) and comb honey (30.26%). It is identified that the annual honey consumption per capita in the study is 1.94 kg and it is above the average of Turkey (1.3 kg). It is found that annual honey consumption per capita increases as consumer income groups increase. The percentage of consumers consuming other bee products (pollen, propolis, royal jelly, etc.) except honey is revealed to be low. It is also determined that bee products except honey are consumed mostly for health purposes. It is necessary to emphasize the activities of introducing other bee products except honey in order to increase their consumption. The interviewed consumers supply honey and other bee products mostly from supermarkets and producers. It is determined that glass jars are usually preferred when purchasing honey. In buying honey, expiry date (4.29), purchasing place of honey (4.14), brand (4.12), variety (4.03), non-crystallization (4.02), honey colour (4.01), product packaging (3.88) and the product price (3.62) are important. 53.30% of the consumers stated that they did not pay attention to the brand while buying honey and other bee products. For this reason, it is considered that the dissemination of marketing strategies, which attach importance to quality and brand, can be an effective tool in solving the problem of negative image (such as fake honey) emerging about honey.

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