The Effect of Registered Product of Mersin Bozyazı Kavutu on Appetite

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Abstract

Bozyazı Kavutu, which consists of carob, sesame, peanuts, and white millet, is a traditional yuruk food of Mersin province. This study aims to determine the effects of Bozyazı Kavutu, which is a local product of Mersin with geographical indication, on appetite and satiety by evaluating the local food satisfaction and behavioral intentions of the people of Mersin. The study participants comprised 78 healthy adults aged 18 and over. The data collection phase of the study was conducted with an online survey. According to the results of the Visual analogue scale (VAS) values, Bozyazı Kavutu reduced the satiety measurements of hunger and prospective consumption ($P < 0.001$). As a result, it is determined that the local food of Bozyazı Kavutu was adequate and balanced in terms of energy and nutrients, suppressed appetite, and could be preferred as a healthy snack and/or the main course in many age groups and individuals with intense physical activity.

Keywords: *Shepherd's halva, local food, visual analogue scale, healthy snack*

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Mersin İlinin Tescilli Ürünü Bozyazı Kavutu'nun İştah Durumu Üzerine Etkisi

Öz

Keçiboynuzu, susam, yer fıstığı ve akdarı içeren Bozyazı Kavutu Mersin iline özgü geleneksel bir yörük yiyeceğidir. Bu araştırma ile Mersin halkının coğrafi işaretli yöresel bir ürünü olan Bozyazı Kavutu ile ilgili yöresel yiyecek memnuniyetleri ve davranışsal niyetleri değerlendirilerek, besinin iştah ve tokluk durumlarına etkisinin tespit edilmesi amaçlanmaktadır. Araştırma katılımcılarını 18 yaş ve üzeri gönüllü 78 sağlıklı yetişkin birey oluşturmuştur. Araştırmanın veri toplama aşaması çevrimiçi anket olarak hazırlanmıştır. Vizüel analog skala (VAS) değerlerinin sonucuna göre Bozyazı Kavutu tüketen bireylerde standart gruba kıyasla açlık duygusunun ve yeme miktarının daha az ($P < 0,001$) olduğu tespit edilmiştir. Sonuç olarak; Bozyazı Kavutu yöresel yiyeceğinin enerji ve besin öğeleri açısından yeterli ve dengeli olduğu, iştahı baskıladığı, farklı yaş grupları ve yoğun fiziksel aktiviteli bireylerde sağlıklı bir atıştırmalık ve/veya ana öğün olarak tercih edilebileceği tespit edilmiştir.

Anahtar kelimeler: *Çoban helvası, yöresel yiyecek, vizüel analog skalası, sağlıklı atıştırmalık*

Introduction

With the effect of globalization, fast food and processed foods have an important place in the nutritional habits of countries. However, the negative effects of these foods on human health have come to the forefront in recent years, and consumers have started to tend to consume local foods again (Hazarhun and Tepeci, 2018). Geographical location, forms of production, historical development, economic and cultural relations, belief structures, ethnic status, and regional nutrition all play an important role in the formation of local foods (Gölgeli, 2016). Also, the registration of these products has gained importance to protect local products from imitations (Saatcı, 2019). The traditional and local food produced in the Bozyazı district of Mersin, Bozyazı Kavutu was registered on 03.09.2020 with the application file number C2018/150 and listed as a product with a geographical indication in the chocolate, confectionery, and derivative products group in the Geographical Indications Portal of the Turkish Patent and Trademark Office (TPTO, 2018). Geographical Indications (GI) are used to distinguish products deemed important due to their geographical origin, determine the origin of the consumed products, and reveal the brands in this regard (Süslü et al., 2020). The implementation of GI in Europe was first introduced in the late 19th century, and it is known that the first implementation took place in France at the beginning of the 20th century. In Turkey, the first attempts in registration date back to the 19th Century (Şahin, 2013).

Due to its ease of preparation and use, Bozyazı Kavutu has been a very valuable food used by locals in the past and preferred by shepherds to meet their daily energy needs during long walks and herding the livestock on the mountains, and it has been transferred from the past to the present. In addition to the people who have

intensive daily working schedules, people, who go on pilgrimage or military service and travel in the highlands, also prefer Kavut (TPTO, 2018). Since the shepherds grazing the livestock also use Kavut as their daily food, another name used for Bozyazı Kavutu in the region is the Shepherd's Halva. Bozyazı Kavutu, which is a traditional yuruk food, consisting of carob (25%), sesame (12.5%), peanuts (50%), and white millet (12.5%). The use of white millet, which was used by our ancestors as an Heirloom Seed also shows the importance of this local food (Dumanoğlu and Çaçan, 2022). Due to its ingredients, Bozyazı Kavutu is brown and looks like halva. It smells like chocolate tahini due to the peanuts and sesame. It is a slightly sweet, nonperishable food that melts in the mouth. It contains natural sugar due to the nuts in its content and there is no added sugar or sweetener in it (TPTO, 2018). The energy content of 100 grams of Bozyazı Kavutu is 461.6 kcal, the fat content is 30.4 g, the carbohydrate content is 26.6 g, and the protein content is 20.4 g (Karabudak et al.., 2021). Bozyazı Kavutu has a reputation bond with the specified geographical area, especially since it has been produced for many years using a specific method without cooking the ingredients. Therefore, all stages of production should take place within the specified geographical area (TPTO, 2018). The greatest advantage of products with GI is that the product moves across borders while maintaining its unique characteristics, and the disadvantage is that it is not different from any other product on the shelf for consumers who do not know about these products (Şahin and Meral, 2012). With the current study, it is expected that in Mersin and outside the province the people's consumption of Bozyazı Kavutu will increase, and that the feeling of satiety will be ensured due to the high content of pulp (in carob and millet), and high level of monounsaturated fatty acids (in peanut and sesame). This study aims to determine the effect of Bozyazı Kavutu on appetite and satiety by evaluating the local food satisfaction and behavioral intentions of the people of Mersin concerning the product.

Methods

Participants

Between November and December 2021 participants, who lived in Mersin, were included in the study with the snowball sampling method to determine the differences in food consumption, appetite and satiety status between the days with and without Bozyazı Kavutu consumption. Inclusion criterias of the study were being healthy, volunteer and at 18 years of age and older (n=78). Individuals who were under the age of 18, did not have a Body Mass Index (BMI) of 18.5-24.9 kg/m2, had chronic diseases (diabetes, hypertension, cancer, heart disease, etc.), used prescription drugs and/or nutritional supplements, were in the period of pregnancy and lactation, consumed alcohol excessively (>2 drinks/day), had smoking habits, were in the menstrual period (for female individuals),were allergic to any food (carob, peanuts, sesame, millet) and didn't fill in 2 days food records incompletely were excluded from the study.

The participants responded to the online survey questions because of the data collection phase of the study was carried out during the COVID-19 pandemic. The online survey was announced via e-mail and social media. Each online survey form consists of five sections: general information, local food experiences, behavioral intention scale, visual analogue scale (VAS) evaluation, and nutrition intake of lunch.

General information

The first part (General Information) contains 11 questions to determine the demographic

characteristics (gender, age, weight and height measurements, marital status, occupation, educational status) of the individuals participating in the study, precognition of Bozyazı Kavutu and their sources of information of this local food.

Local food experiences scale

In the second part (Local Food Experiences), the scale, which is an eight-dimension scale that was developed by Adongo, Anuga, and Dayour (2015) and consists of 25 items, was used for measuring the memorable local food experiences of individuals. Since the 4 items in the scale did not comply with the scope of this study, they were removed by the researchers, and the survey was evaluated over 21 items. I participated in preaparing local food, I preferred local food ingredients, I was unfairly treated by the local tradesmen about the price and There was garbage around the places where I experienced local food are the removed items. Reliability and factor analyses were performed for the scale. The scale used in the study is a 21-item scale designed to evaluate memorable local food experiences by measuring the dimensions of Hedonism (3 items), Innovation (4 items), Local Culture (4 items), Freshness (3 items), Significance (3 items), Participation (1 item), Knowledge (3 items), and Negative Experience (1 item). Participants were requested to mark the extent to which they agreed with these statements on a 5-point Likert-type scale (1=strongly disagree, 5= strongly agree).

Behavioral intention scale

The third part of the survey contains the Behavioral Intentions Scale (1. Saying positive things to others, 2. Recommending to others, and 3. Revisiting) (Liu and Jang, 2009; Liu et al., 2005). The responses were marked on a 5-point Likert-type scale.

Both the Local Food Experiences and Behavioral Intentions Scale have Turkish translations and versions. The scale used by Ölmez (2017) was used in this study. Likert scale interpretation and distrubition of values are shown in Table 1.

Table 1

Local food experiences and behavioral intentions likert scale interpretation and distribution of values (Ölmez, 2017)

Likert Scale	Likert Scale Interval	Likert-Scale Description
1	1.00-1.79	Strongly disagree
2	1.80-2.59	Slightly agree
3	2.60-3.39	Moderately agree
4	3.40-4.19	Strongly agree
5	4.20-5.00	Strongly agree

Visual analogue scale (VAS)

The satiety assessment was performed using the VAS in the fourth part of the survey. Situations related to each question in the VAS questionnaire were measured on a 10 cm horizontal line with both ends fixed. Individuals were requested to score from 1 to 10 according to how they felt on minutes 0 (pre-consumption), 30, 60, 120, and 180. VAS consists of two parts. The first part measures the satiety score table. This part includes four sections and shown in Table 2 (Cisse et al., 2018; Potier et al., 2010). The

second part measures the appetite score table against some foods. In this part, four eating desires were questioned and shown in Table 2 (Carrol et al., 2020; Toydemir, 2017; Yılmaz, 2019).

Table 2
Interpretation of VAS Likert Scale

VAS Scale	Scale	
First Part	**1**	**10**
1. Fullness	I'm not full at all	I'm very full
2. Hunger	I am never hungry	I have never been so hungry before
3. Desire to eat	My stomach is completely empty	I cannot have another bite
4. Prospective consumption	I can't eat anything	I can eat more
Second Part	**1**	**10**
1. Desire to eat sweet foods	Yes, I would like that very much	No, I would not like that at all
2. Desire to eat salty foods	Yes, I would like that very much	No, I would not like that at all
3. Desire to eat sour foods	Yes, I would like that very much	No, I would not like that at all
4. Desire to eat fatty foods	Yes, I would like that very much	No, I would not like that at all

In the evaluation of VAS, the scores marked in all minutes (min 0, 30, 60, 120, and 180) were collected for each part (hunger, satiety, desire to eat, prospective consumption, and desire to eat something sweet, salty, sour, and fatty), and the evaluation was performed over the mean scores. In addition, the overall appetite score was also evaluated in the satiety score table part. The overall appetite score was calculated by adding [Desire to eat score+ Hunger score + (100-Fullness score) + Prospective consumption score] values, dividing the total score by 4, and obtaining the mean score (Vuksan et al., 2009; Vuksan et al., 2017).

Nutrition intake of lunch

In the fifth and last part of the survey, firstly all participants were trained by a dietitian on how to note their food records of the 1st and 2nd days by phone call. After this training phase, Bozyazı Kavutu (10 g) to be tested in the study was delivered to the addresses of each participant by the researchers. All participants were asked to fast after 21:00 for two days. The standard breakfast menu was listed in the online survey. On Day 1, all participants had the standard breakfast menu. They could have sugar-free light tea, 2 slices of white cheese (60 g), 2-3 slices of bread (25-50 g), cold cuts (cucumber, tomato, pepper), 5-10 olives. Then they were asked to note the foods they were allowed to consume at lunch, including their amounts (cheddar, bagel or bread, cold cuts, jam/honey, fruit or fruit juice, buttermilk, or yogurt) in the online survey. On Day 2, in addition to the standard breakfast menu, all participants were asked to consume Bozyazı Kavutu (10 g, 1 serving amount) for breakfast, and they were asked to note the foods they consumed at lunch, including their amounts. Whether the participants consumed standard breakfast menu and Bozyazı Kavutu (10 g) was reminded and confirmed by phone calls. Also, in the online survey, it was stated that the participants should not use extra salt. Since 1 participant did not note the food she/he had consumed, 77 individuals were evaluated for energy and nutrients using the Computer Aided Nutrition Program (BEBIS

8, full version).

For this study, Ethics Committee Approval dated 01.11.2021 and numbered 4203 was obtained from the Ethics Committee of the Scientific Research and Publication Board of Toros University.

Statistical analysis of data

A power analysis was performed for dependent samples to determine the size of the sample. The results indicate that at least 6 samples should be taken in total with 95% confidence, 95% test power, and a 1.75 effect size for the one-way hypothesis (Prathikanti et al., 2017). The data obtained in the study were evaluated using SPSS for Windows version 22 software. Convenient descriptive values were used for qualitative and quantitative variables. Qualitative variables were expressed as frequency (f) and percentage (%), and the quantitative variables were expressed as mean and standard deviation ($\bar{X}$ ±SD). The conformity of the variables to normal distribution was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov/ Shapiro-Wilk tests). Paired sample t-test or non-parametric Wilcoxon test was used to determine the difference between the two dependent groups and continuous variables. The level of significance was accepted as 0.05 for statistical analysis.

Results

Information about the demographic characteristics and anthropometric measurements of the participants of this study was summarized in Table 3. The mean age of the participants was found to be 33.09 ± 14.64 years and it was determined that the number of female participants (n=55) was higher compared to the number of male participants (n=23). The majority of the participants in the study were single (60.3%), students (39.7%), or individuals working in the private sector (29.5%) (data not shown). While most of the participants stated that they had never heard of Bozyazı Kavutu before (n=75, 96.2%), participants who had heard it stated that they had heard it from their friends (n=2) and magazines (n=1).

Table 3

Results of the demographic and anthropometric measurements of the participants

Variable (n=78)	Mean Value (Minimum-Maximum)
Age, (X ±SD), years	33.09±14.64 (18-76)
Gender (M/F), n (%)	23(29.5)/55(70.5)
Body weight (kg)	64.82±10.95 (47-95)
Height (cm)	168.87±8.08 (150-188)
Body Mass Index, (X ±SD) kg/m2	22.67±3.06 (16.46-34.29)

The information about the local food experience of the participants regarding Bozyazı Kavutu was summarized in Table 4. The statement that was agreed upon at the lowest level was found to be, I experienced health problems such as diarrhea/stomach problems after consuming the product (1.27± 0.88). In addition, although the individuals did not agree that Bozyazı Kavutu was the most delicious local food they had eaten in their lives (2.64±1.30), they stated that they tried a new local food (4.47±0.77) and gained a new experience (4.40±0.81). Most of the participants thought that the people who served local food were sincere (4.70± 0.82). According

to the average responses on the memorable local food experience scale, most of the participants expressed their positive opinions by marking moderately agree and strongly agree. The statement I experienced health problems such as diarrhea/stomach problems after eating the product, which required a negative response, was mostly responded to as I strongly disagree. Findings related to determining the opinions of the individuals participating in the study on their behavioral intentions were also presented in Table 4. Most of the participants stated that they wanted to come to Bozyazı for the local food experience (3.65±1.24), they would recommend the local food experience related to Bozyazı Kavutu to their friends and others (3.90± 1.33), and they would say positive things to others about their local food experience related to Bozyazı Kavutu (4.01±1.22), expressing positive opinions about Bozyazı Kavutu by marking strongly agree.

Table 4

Distribution of the memorable local food experience and behavioral intentions scale of Bozyazı Kavutu (n=78)

Local food experience	Strongly Disagree n(%)	Slightly Agree n(%)	Moderately Agree n(%)	Agree n(%)	Strongly Agree n(%)	X ±SD
It was an interesting experience.	0	2(2.6)	24(30.8)	23(29.5)	29(37.2)	4.01±0.89
I enjoyed the experience.	3(3.8)	4(5.1)	16(20.5)	21(26.9)	34(43.6)	4.01±1.10
I gained a new experience.	1(1.3)	0	10(12.8)	23(29.5)	44(56.4)	4.40±0.81
The people who served the local food were sincere.	2(2.6)	1(1.3)	3(3.8)	6(7.7)	66(84.6)	4.70±0.82
I ate something noteworthy.	5(6.4)	6(7.7)	13(16.7)	28(35.9)	26(33.3)	3.82±1.17
This local food experience was important.	3(3.8)	7 (9.0)	17 (21.8)	26(33.3)	25(32.1)	3.81±1.10
I tried new local food.	0	2(2.6)	7 (9.0)	21(26.9)	48(61.5)	4.47±0.77
I had health problems such as diarrhea/stomach disease after eating the product.	69(88.5)	4(5.1)	1(1.3)	1(1.3)	3(3.8)	1.27±0.88
Behavioral intentions scale						
I would like to visit Bozyazı for a local food experience.	5(6.4)	8(10.3)	23(29.5)	15(19.2)	27(34.6)	3.65±1.24
I would recommend my local food experience related to Bozyazı Kavutu to my friends and others.	7(9)	6(7.7)	13(16.7)	14(17.9)	38(48.7)	3.90±1.33
I would tell positive things to others about my local food experience about Bozyazı Kavutu.	6(7.7)	2(2.6)	15(19.2)	17(21.8)	38(48.7)	4.01±1.22

Reliability and factor analysis

An exploratory factor analysis was performed to test the construct validity of the Memorable Local Food Experience Scale. According to the results of the analysis, it was determined that the data were compatible with the 8-factor structure of the scale. The Kaiser-Meyer-Olkin (KMO) analysis result of the scale was found to be 0.88 for all dimensions and the overall scale and the Barlett test were significant (P =.000). The total variance explained was found to be 82.53%. As a result of the reliability analysis, the Cronbach's Alpha reliability coefficient of the memorable local food experience scale was found to be 0.93 for the overall scale, 0.79 for the hedonism scale, 0.78 for the innovation scale, 0.63 for the local culture scale, 0.88 for the freshness scale, 0.82 for the significance scale, and 0.76 for the knowledge scale.

An exploratory factor analysis was performed to test the construct validity of the Behavioral Intentions Scale. According to the results of the analysis, it was determined that the data were compatible with the single-factor structure of the scale. The KMO analysis result of the scale was found to be 0.757, and the Barlett test was significant (P =.000). The results of the reliability analysis showed that the total Cronbach's Alpha reliability coefficient of the Behavioral Intentions Scale was 0.81.

Energy and nutrients

After the participants of the study (n=77) had their standard breakfasts, the energy and nutrient values calculated according to the intake of the nutrients allowed to be consumed at lunch on Day 1 (standard day) and Day 2 (Bozyazı Kavutu Day) were presented in Table 5. When Bozyazı Kavutu was consumed (Day 2), it was found that the participants consumed less energy (P <0.001), protein (P <0.001), carbohydrate (P <0.001), fat (P <0.001), and other nutrients compared to Day 1 (standard day), as expected, and the difference was found to be significant (P <0.05).

Visual analog scale (VAS)

The difference between the arithmetic means of VAS values on Days 1 and 2 were presented in Table 6. Compared to the group that had consumed standard food, it was statistically determined that participants, who had consumed Bozyazı Kavutu had less sense of hunger (P <0.001) and prospective consumption (P <0.001). In addition, according to the inversely scored appetite score table, the desire to eat sweet, salty, and fatty food decreased in participants who consumed Bozyazı Kavutu compared to the standard day (P =0.005, <0.001, 0.002, respectively). No significant difference was found in the overall appetite score (P =0.117).

Discussion

Local products and flavors bring that region to the forefront in terms of tourism, contribute to the promotion and economy of the region, and enable the region to be preferred (Perçin and Keskin, 2019). Since Bozyazı Kavutu, which is a product with geographical indication, includes the name of the region, it is believed that it will also contribute to the promotion of the region. According to the data obtained in the current study, the percentage of participants who had heard about this local food was found to be quite low, and it was determined that the friend and magazine factors were effective in hearing about this product. In a study on local foods in Seferihisar, most of the participants also stated that they had heard about these products through friends/relatives (Ölmez, 2017).

Table 5
Results of the energy and nutrient intake values

Nutritional components (n=77)	**Day 1** (X ±SD)	**Day 2** (X ±SD)	***P -value***
Energy (kcal)	416.82±213.25	230.99±167.98	<0.001*
Protein (g)	15.60±9.11	9.03±6.87	<0.001*
Fat (g)	17.30±13.26	10.55±9.84	<0.001*
Carbohydrate (g)	48.18±22.43	24.22±17.70	<0.001*
Fibre (g)	3.96±2.10	2.05±1.76	<0.001*
Vitamin B1 (mg)	0.16±0.09	0.09±0.07	<0.001*
Vitamin B6 (mg)	0.19±0.12	0.12±0.09	<0.001*
Potassium (mg)	515.26±300.39	330.90±237.35	<0.001*
Calcium (mg)	356.83±250.07	218.88±192.85	<0.001*
Magnesium (mg)	63.29±30.80	34.03±24.51	<0.001*
Phosphorus (mg)	292.41±179.75	177.92±140.71	<0.001*
Iron (mg)	1.51±0.92	0.75±0.60	<0.001*
Zinc (mg)	2.04±1.22	1.20± 0.95	<0.001*
Nutritional components (n=77)	**Day 1 Median (Min-Max)**	**Day 2 Median (Min-Max)**	**P -value**
Cholesterol (mg)	27.00 (0.00-272.00)	20.00 (0.00-214.20)	0.001*
Vitamin A (IU)	188.80 (0.00-2108.00)	95.00 (0.00-1186.00)	<0.001*
Vitamin E (IU)	1.10 (0.00-8.5)	0.70 (0.00-6.6)	<0.001*
Vitamin B2 (mg)	0.30 (0.00-6.00)	0.20 (0.00-0.70)	<0.001*
Folate (µg)	40.00 (0.00-158.00)	28.00 (0.00-131.00)	<0.001*
Vitamin C (mg)	13.70 (0.00-96.70)	7.20 (0.00-58.00)	<0.001*
Sodium (mg)	700.00 (1.50-2795.00)	313.50 (0.00-2198.6)	<0.001*

*: *Wilcoxon t-test, $p<0.05$*

Table 6
Results of the visual analogue scale for standard day (day 1) and Bozyazı Kavutu day (day 2)

Variable (n=78)	Day 1	Day 2	P-value
Hunger	40.90 ± 14.70	34.46 ± 14.71	<0.001*
Fullness	47.53 ± 16.36	38.51 ± 17.44	<0.001**
Desire to eat	49.54 ± 16.72	51.02 ± 20.86	0.318
Prospective consumption	43.05 ± 17.76	35.31 ± 15.84	<0.001**
Overall appetite score	46.49 ± 7.41	45.57 ± 7.63	0.117
Sweet	50.18 ± 22.89	56.05 ± 26.38	0.005*
Salty	54.44 ± 22.03	59.38 ± 23.58	<0.001*
Sour	65.67 ± 28.98	67.87 ± 29.28	0.069
Fatty	59.44 ± 28.17	64.20 ± 28.26	0.002*

**Wilcoxon t-test, p<0.05 **Paired sample t-test, p<0.001*

of 100 g Bozyazı Kavutu were 461.6 kcal, 30.4 g, 26.6 g, and 20.4 g, respectively. According to food consumption records, any food intake that provides more than 50 kilocalories (kcal) of energy accepted as a meal. The daily total of these meals, those that provide more than 15% of the energy are defined as the main meal, those who provide less than %15 of the energy are defined as snacks. Thus,, 50 g of Bozyazı Kavutu would meet the daily nutritional needs for snacks (Murakami and Livingstone, 2016). The literature contains studies on the energy and nutrients of local foods (Ponka et al., 2016; Aykut, 1987; Özer, 2018; Şeker and Hastaoğlu, 2020); however, there is no study evaluating the differences in individuals in terms of energy and nutrients between local food consumption and the day that is not consumed. Looking at the contents of energy and nutrients in 100 grams of local foods in the studies in the literature, the values in the current study were similar to the values obtained by Dashti et al. (2001), Önçel et al. (2018), Güldemir et al. (2022), Durazzo et al. (2017), Aykut (1987), and Bodur et al. (1996) in terms of energy and nutrients, but our results were found to be higher compared to the study of Ponka et al. (2016). According to the types of nutrients used in the preparation of Bozyazı Kavutu and the number of nutrients it includes, it has been determined that this local food has a high-energy nutrient composition (23% carbohydrate, 18% protein, and 59% fat; 461.6 kcal) and is rich in fat and protein. Although 10 g of Bozyazı Kavutu is considered a snack, it can provide almost one main course to healthy individuals when consumed in 50 grams (5 on average). In addition, in the present study, there was a decrease in the amount of energy and nutrient intake in individuals after consumption compared to the standard day, and the difference was found to be significant ($p<0.05$). This result was thought to be due to the effect of the high fat content and fat composition of Bozyazı Kavutu: high monounsaturated (MUFA) and polyunsaturated fatty acids (PUFA) on the feeling of satiety. Sesame and peanut, which are among the components of Bozyazı Kavutu, increased the MUFA and PUFA intake of individuals on the day of consumption of Bozyazı Kavutu compared to the standard day. According to the Turkish Food Composition Database (2017-2023a,b); in the content of Bozyazı Kavutu, it is

Concerning the development of the province, region, or area, it is important that indication marks are included in food and beverage enterprises and that registered products are promoted and marketed (Yıldız, 2021). In the present study, the administration of memorable local food experience and behavioral intentions surveys regarding Bozyazı Kavutu, a product with a geographical indication, on the participants living in Mersin for the first time, would shed light on the positive or negative experiences of tourists who intended to visit the region in the future. In addition, as in the study conducted by Henderson (2009), experiences related to local food are believed to affect behavioral intentions. Even if tourists do not have any past experience, only memorable and positively remembered local food experiences can trigger their intention to revisit a region (Ölmez, 2017). In addition, tourists who visit the region tend to share their positive or negative local food experiences with their environment. This is an important indicator of how local foods affect behavioral intentions (Björk ve Kauppinen-Räisänen, 2012). In the present study, according to the responses to the memorable local food survey, higher positive results were obtained in the dimensions of hedonism, local culture, freshness, significance, participation, and knowledge, while a positive but moderate result was obtained in the innovation sub-dimension. The mean score of the responses to the sub-dimension related to negative experience was as low as expected. In the study of Ölmez (2017), a more moderate positive result was obtained in the participation sub-dimension related to local foods, while higher positive results were obtained in other sub-dimensions similar to the present study. The mean score of the sub-dimension related to negative experience was found to be negative and similar to the present study. In the study of Adongo et al. (2015), a moderately positive result was obtained in the freshness sub-dimension and in the participation sub-dimension, similar to the present study. In the present study, it is thought that the mean of positive responses related to the participation sub-dimension was lower since the participants did not engage in activities such as supplying the materials of the product and preparing the Bozyazı Kavutu, which was a local food. In addition, it was observed in the present study that positive experiences related to local food had a positive effect on behavioral intentions, similar to the study of Henderson (2009). According to the results of the behavioral intention scale, the participants stated that they wanted to visit Bozyazı for the local food experience, that they would recommend the local food experience related to Bozyazı Kavutu to their friends and others, and that they would say positive things to others about the local food experience related to Bozyazı Kavutu. Positive results similar to the present study were obtained in a study on local foods in Seferihisar (Ölmez, 2017).

Ethnic diversity is believed to have effects on the nutritional habits and culinary cultures of the people of the region, as in all areas of life (Özbek and Güzeler, 2022). When the cuisines of each country are examined, the preparation and cooking of food and the tools and equipment used have different characteristics. In particular, the climate of the region and the vegetables and fruits grown in the region affect the culinary culture and variety richness of that region. Accordingly, the energy and nutrient values of local dishes specific to each region differ (Esin and Yücel, 2022). When consumers have knowledge about the energy and nutrient content of local foods and make their food preferences by considering their daily energy and nutrient needs, this can reduce their preferences for high-energy and unhealthy food (Gümüş, 2014). In the current study, it was stated that the energy, fat, carbohydrate, and protein content

seen that sesame and peanuts are rich in MUFA and PUFA (17.791 g and 16.661 g per 100 g of sesame, 10.952 g and 6.443 g of peanuts per 100 g, respectively). It is known that foods containing fat give a feeling of satiety (Mol, 2008; Şahin et al., 2014). Additionally, there is evidence to suggest that foods high in MUFA and PUFA cause greater thermogenic effects. It is thought that foods high in saturated fatty acids have a low glycemic index and regulate appetite (Dikmen, 2015). At the same time, it is thought that PUFA reduce appetite by affecting both leptin and cholecystokinin hormones, thus supporting body weight loss (Albracht-Schulte et al., 2018).

VAS is a method used for the subjective measurement of a level of sensitivity (pain, itching, appetite, etc.). VAS, which is used to measure appetite status, contributes significantly to predicting the nutritional behaviors of individuals and evaluating their food, energy, and nutrient intake. In addition, since similar results are obtained with previous VAS results when the test is repeated, it is frequently preferred in practice as a test with proven validity and reliability (Stubbs et al., 2000). One of the advantages of the method is that it is a non-invasive method, the test does not have a specific language, and it can be easily understood and administered online. These features enabled the scale to be easily administered during the COVID-19 pandemic, as in the present study. There were VAS studies used to measure appetite status in the literature (De Graaf, 1993; Hill and Blundell, 1982; Leathwood and Pollet, 1988), and there were no VAS studies administered to measure appetite status during the COVID-19 pandemic, as in the current study. In the study conducted by Vuksan et al. (2017) on 15 healthy individuals, beverages containing flax seed and chia seeds were compared with the values obtained from the VAS satiety score table according to a standard drink containing glucose. As a result of the study, no significant difference was found between the beverage containing flax seed and the control group ($P > 0.05$), while a significant difference was found between the beverage containing chia seed and the control group ($p < 0.05$). Similar to the results of this study, a decrease was found in the values obtained in the thought of hunger and prospective consumption compared to the control group, and the difference was found to be significant ($P < 0.05$). In the present study, a significant decrease was observed in the values of the fullness part in participants who had consumed Bozyazı Kavutu compared to the standard day ($P < 0.05$) which was not similar to the study of Vuksan et al. (2017). This may be due to the fact that individuals had less protein and fatty nutrition compared to the standard day on which Bozyazı Kavutu was consumed in the current study. Similar results were obtained in the overall appetite score, in which general evaluation was made using the VAS; however, the difference was not found to be significant in the present study ($P > 0.05$). In another study conducted on 31 healthy individuals, there was a decrease in the overall appetite score; however, the difference was not significant ($P > 0.05$) (Vuksan et al., 2009). In addition, in the present study, the appetite score table was examined with the VAS, and the desire to consume sweet, salty, and fatty foods in healthy individuals consuming Bozyazı Kavutu was found to be lower compared to the participants, who had consumed standard nutrition, and the difference was found to be significant ($P < 0.05$). In the study conducted by Carrol et al. (2020) on 29 healthy individuals, as a result of the VAS, it was found that there was a decrease in the desire to eat something sweet in the test group, and the difference was found to be significant ($P < 0.05$).

Conclusion

As a result, the individuals living in the region have positive effects on the local food experiences and behavioral intentions related to Bozyazı Kavutu. Bozyazı Kavutu is sufficient and balanced in terms of energy and nutrients and suppresses appetite due to foods such as carob, white millet, peanut, and sesame in this local food. Therefore, this product can be used as a healthy snack and/or main meal in many age groups and people with intense physical activity.

Mersin is a gastronomy city and it will be important to develop recommendations for increasing the tourism potential. In this regard, the unique flavors of Mersin, which are under the influence of many cultures, should be registered and supported by geographical indications. In this respect, it will be essential to introduce local products such as Bozyazı Kavutu, which is a product with geographical indication, to create differences and to protect the product. Bozyazı Kavutu may leave positive experiences in tourists in terms of domestic and foreign tourists who would visit Bozyazı; and thus, they would want to visit the region, especially for this local food experience. Moreover, the fact that the white millet used in the production of this product is an heirloom seed is extremely important in terms of sustainable agriculture and genetic transfer.

Limitations of the study

One of the limitations of the study was the inclusion of individuals living only in Mersin in the study. It will be possible to make a more comprehensive evaluation of local food with the participation of domestic and foreign tourists in the study. The fact that the study coincided with the COVID-19 pandemic caused data collection tools to be administered online, which constitutes one of the limitations of the study. In addition, it is thought that the fact that only 10 g local food was given to the participants for testing purposes did not provide the expected and statistically significant result, especially in the evaluations related to their fullness status and overall appetite scores. Further studies with Bozyazı Kavutu consumption of more than 10 g should be planned.

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