

# Consumption and assessment of organic food by adult residents of Vilnius (Lithuania)

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Rimantas Stukas\*,

Genė Šurkienė,

Rūta Dubakienė,

Reda Nagytė,

Marius Baranauskas

*Faculty of Medicine,  
Vilnius University,  
M. K. Čiurlionio 21/27,  
LT-03101 Vilnius, Lithuania*

The aim of the study was to investigate the extent of consumption and assessment of organic food by adult residents of Vilnius, Lithuania.

**Methods.** The target city of our research was Vilnius, the capital of Lithuania. It is the largest Lithuanian city hosting diverse nationalities with a variety of lifestyles and nutritional habits. The survey was conducted in largest supermarkets of Vilnius, by using anonymous questionnaires, from March to August 2008. The total amount of questionnaires circulated was 521, and 514 responses were received (response rate 98.7%). Residents of Vilnius were surveyed by using anonymous questionnaires. The questionnaire included enquiries about views on organic food, reasons for its consumption non-consumption, availability and access to the information.

Data analysis was performed with SPSS 14.0 software. The Mann–Whitney rank sum criterion (U) was used to evaluate statistically significant differences among the groups. A chi square ( $\chi^2$ ) statistics was used to identify the association of qualitative features, and the number of the degrees of freedom was calculated (df). A p value less than 0.05 was considered to indicate a statistically significant difference ( $p < 0.05$ ).

**Results.** Organic food was consumed by 82.1% of respondents (88.2% of women and 71.2% of men). In terms of frequency, Vilnius residents are rare consumers of organic food. Consumers with two or three times a week comprise 37.2% of the respondents, while the rest are even less frequent. The number of females who consume organic food is significantly greater than that of males ( $p < 0.05$ ). However, men are found to be more frequent consumers. Also, organic food is consumed by a significantly greater amount of younger residents ( $p < 0.05$ ). A significant association was observed among age groups and consumption ( $p = 0.009$ ): subjects aged 18–34 were more frequent consumers. Those with university and vocational education showed a significantly higher consumption rate ( $p = 0.029$ ), and 97.5% of the respondents would buy organic food products if they were less expensive. The prevailing reasons for choosing organic food were their (27.3%), healthiness (90.0%) and good taste (38.9%). The prevailing reasons for the absence of consumption: too expensive (53.3%), not tasty (5.4%), shorter expiry period (21.7%), inability to distinguish between organic and conventionally produced food (28.3%). Most frequently are purchased organic fruit, berries and vegetables (71.8%), dairy products, bread and other bakery products (49.3%), teas (42.9%), and meat products (29.9%). Compared to men, women buy significantly greater amounts of organic fruit, berries and vegetables ( $p = 0.010$ ), eggs ( $p = 0.002$ ), spices ( $p = 0.022$ ), whereas men prefer bread and other bakery products ( $p = 0.002$ ). In most cases consumers buy organic foods at supermarkets (83.6%), less frequently at farmers' markets (34.1%), food fairs (11.8%), other places, e. g., specialised stores (14.9%). As 3.1% of our respondents have indicated that they do not purchase organic food but are organic food consumers, we assume that they grow organic food themselves.

**Conclusions.** Residents of Vilnius consume organic food because it is regarded to be healthy, and cite higher prices of organic food as the main prohibitive factor. Women and younger respondents are significantly more frequent consumers of organic food. The majority of residents when purchasing organic food at supermarkets are able to distinguish organic from conventionally produced food; however, they feel a lack of information on it.

According to our findings, higher prices of organic food remain the major prohibitive factor for its non-consumption.

**Key words:** nutrition, organic food

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\* Corresponding author. E-mail: rimantas.stukas@mf.vu.lt

## INTRODUCTION

The steady improvement in the industrial development, sophisticated technologies, an alarming amount of cars and chemical substances used in our environment contribute to the increasingly growing air pollution, water and soil contamination. People continuously inhale polluted air, consume contaminated food and drink unsafe water, which results in their weakened immune system or an increased risk of diseases and allergies. Naturally, in recent years people have started focusing on organic foods. Such products have proven to be at an advantage compared to those most commonly consumed. Furthermore, organic foods are beneficial to both humans and the environment. In terms of nature protection and natural balance, organic food growth, production and processing procedures are secure and protective (Hamm et al., 2002; Hermansen, 2003; Kouba, 2003; Minou, 2006; Rosati, Aumaitre, 2004; Kriauciūnienė et al., 2007; Chmieliauskaitė et al., 2009).

Organic foods are defined as certified agricultural and food products grown, processed, branded and distributed in accordance with the regulations of organic agriculture standards (Lietuvos Respublikos... No. 375, 2000; Lietuvos Respublikos... No. IX-987, 2002). They are nutritious and taste good. Organic foods are grown without using any pesticides, genetically modified organisms, hormones or antibiotics (Stukas, 2007; Schmid, 2005). Plenty of numerous chemical substances quite unfamiliar to the human organism are being used by food industry nationally and worldwide. These products are unfavourable to human health. Currently, the significance of healthy nutrition and the benefit of healthy food consumption are receiving a growing interest (Willer, Kilcher, 2009; Zanolini, 2000). It is traditional in Lithuania to breed stock and grow plenty of agricultural products. In terms of health, it is important to promote organic farming so that more healthy products were grown that may suggest more favourable sustainable food consumption conditions (Rutkoviėnė, Garliauskienė, 2007).

Since organic food is highly beneficial to our health, its promotion should be continuous to raise the awareness of general public and promote consumption. Even though organic foods are labelled, our study aimed to identify the people's awareness of organic food and its health benefits, the frequency of organic food consumption, the reasons for its consumption or non-consumption, the availability and assessment of organic foods, people's ability to distinguish them from other foods, the sufficiency of information and its sources, and their consumption dependence on reduced prices.

Organic food is a comparatively new category of food products on the Lithuanian market. It was around 1993 that organic farming ideas reached Lithuania. Earlier organic food had not been distinguished as a separate category. So far, on the national scale, little research has been conducted on organic food consumption or organic food consumers'

views. Consequently, the results of this study will be useful in preparing a wide range of national health improvement programmes or promotional programmes of healthy nutrition and healthy lifestyle as well as enhancing organic food consumption. The imbalance observed in the consumption of organic food is also influenced by sociodemographic factors. The aim of our research was determined by the above-mentioned range of factors. We focused on Vilnius, the capital of Lithuania, which is our largest city hosting diverse nationalities with a variety of lifestyles and nutritional habits.

**The aim of our study** was to investigate the extent of consumption and assessment of organic food by adult residents of Vilnius (Lithuania).

## MATERIALS AND METHODS

An anonymous questionnaire survey was conducted from March to August 2008 in the largest supermarkets of Vilnius. The total amount of questionnaires circulated was 521, and 514 responses were received (response rate 98.7%); 514 adult residents of Vilnius aged 18–78 were surveyed by using a 21-item questionnaire on the people's awareness of organic foods and their health benefits, the frequency of organic food consumption, reasons for their consumption or its absence, the availability and assessment of organic food, people's ability to distinguish them from other foods, the sufficiency of information and its sources, and the consumption dependence on prices. A number of options were offered to our respondents in answering questionnaire items on what products they purchased, the reasons why / why not they consumed them, whether they were able to distinguish organic food from conventionally prepared products, where they purchased organic food, where they found information on it, etc. Respondents indicated their age, sex, education and income.

Data analysis was performed with SPSS 14.0 software. The Mann–Whitney rank sum criterion (U) was used to evaluate statistically significant differences among the groups. A chi square ( $\chi^2$ ) statistics was used to identify the association of qualitative features, and the number of the degrees of freedom was calculated (df). A p value of less than 0.05 was considered to indicate a statistically significant difference ( $p < 0.05$ ).

Among the surveyed 514 adult residents of Vilnius, aged 18 to 78, women covered comprised 64.2% and men 35.8%. The distribution of the respondents might have been influenced by the Lithuanian tradition that women purchase food for the family. The subjects were divided into three age groups: group 1 – aged 18–34, group 2 – aged 35–49, group 3 – aged 50–78. Among our respondents there were no people over the age of 78 years. We assume that younger people purchase food for them. The respondents' education was as follows: university degree 41.6%, college education 15.8%, vocational education 7.8%, secondary 33.5%, basic 1.0%, and primary 0.4%.

The majority of respondents (40.9%) indicated their monthly income from 1001 to 1500 Lt (1 Euro = 3.5 Lt), whereas the minority (4.1%) claimed <500 Lt of monthly income.

## RESULTS AND DISCUSSION

### Incidence and frequency of organic food consumption

According to our study, organic food was consumed by 82.1% of respondents (by 88.2% of women and 71.2% of men). The number of females who consumed organic food was significantly greater than that of males ( $p < 0.05$ ). However, all of them consumed organic food comparatively rarely.

The highest frequency of organic food consumption by our respondents was 2–3 times per week (37.2% of respondents) and the lowest once a month (6.2%) (Fig. 1). To compare, in France organic foods were consumed once a month by 43%, once a week by 23% and daily, by 7% of respondents (Centre for Agricultural Information..., 2008).

Men showed a statistically significant frequency in organic food consumption, i. e. 2–3 times per week 42.7% and daily 31.3%, whereas women were more frequent consumers once a week (25.1%) and once a month (7.2%) ( $p = 0.000$ ,  $\chi^2 = 11.090$ ,  $df = 4$ ) (Fig. 2).

People aged 50–78 were found to be more frequent daily organic food consumers (36.6%), whereas the frequency in younger age respondents was 2–3 times per week: in those aged 18–34 years – 37.9%, 35–49 years – 38.5%; however, the difference was not statistically significant ( $p = 0.389$ ,  $\chi^2 = 8.467$ ,  $df = 8$ ).

Furthermore, no statistically relevant correlation was found between the frequency of organic food consumption and education ( $p = 0.716$ ,  $\chi^2 = 16.010$ ,  $df = 20$ ). However, daily consumption of organic foods was more frequent in res-

pondents with vocational education (31.3%), 2–3 times per week – with vocational (42.9%) and secondary (41.0%), once a week – with college education (25.5%), once a month – in respondents with secondary education (6.7%).

Respondents with monthly incomes over 1500 Lt (1 Euro = 3.5 Lt) showed a 2–3 times higher weekly frequency in the consumption of organic foods (41.1%) than those with monthly incomes lower than 500 Lt – once a week (38.9%). However, no statistically significant correlation between the frequency of consumption and incomes was determined ( $p = 0.259$ ,  $\chi^2 = 14.686$ ,  $df = 12$ ).

The organic food market has been investigated in various approaches by world as well as national scientists. According to Hartmann group's findings, more than half of Americans (54%) more or less frequently consume organic food, every tenth of them at least once a week (Organic Food & Beverage Trends, 2004).

A survey carried out in 2006 in Lithuania has revealed that organic products are purchased by consumers with average or higher than average incomes. Over 87% of the consumers were likely to purchase in supermarkets and required both a wider range of these products and their presentation.

Over the last years, a number of nation-wide investigations have been conducted on the organic food market, customer awareness and consumption habits. The studies have revealed that 34% of the respondents are familiar with organic food, i. e. they have bought or consumed it (Čiukienė, 2006).

Rutkovicienė and Abraitytė (2006) investigated the consumers' attitude to organic food in Lithuania and surveyed 610 respondents at organic food purchase places. Their study revealed the largest organic food consumer groups: aged under 21–33% and those aged 21–30 covered 47% of the respondents. Even 73% of the surveyed purchased organic food

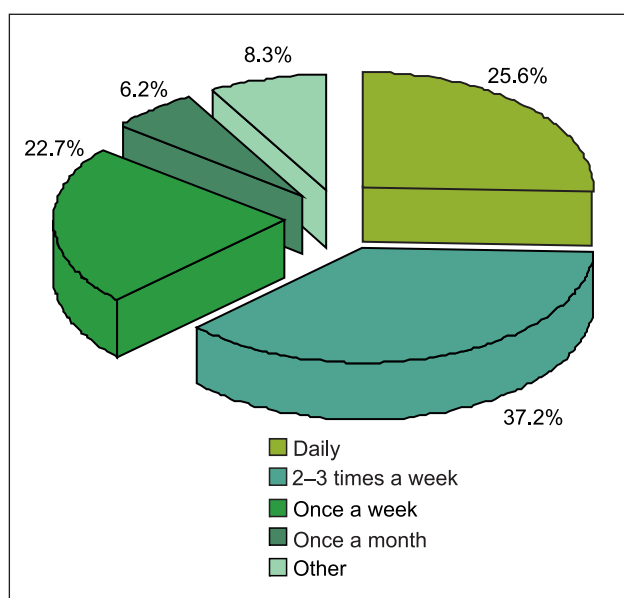


Fig. 1. Frequency of organic food consumption

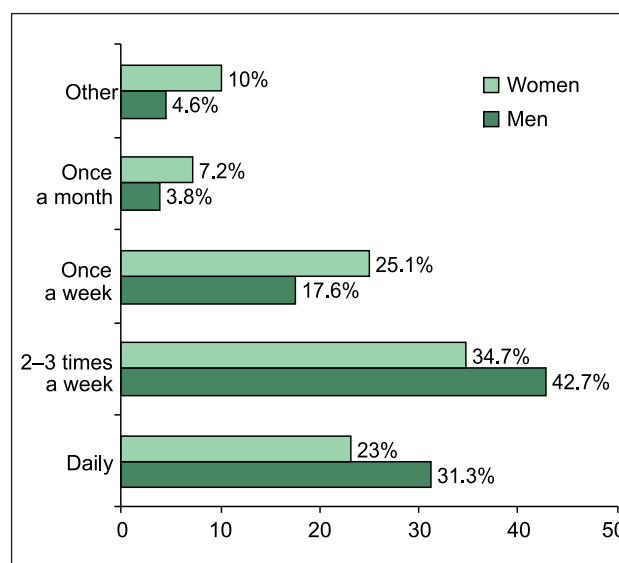


Fig. 2. Frequency of organic food consumption with respect to sex  
 $U = 21567.000$ ,  $p < 0.05$

(mostly vegetables, fruit and berries): 1/5 of them every day, 1/3 once or several times a week. The consumers are aware of the benefits of organic food and are ready to pay more: 80% of the respondents will pay more by 1/4 and 18% even more by 50% (Rutkoviėnė, Abraitytė, 2006).

A study conducted in Lithuania in 2007 showed that 90% of the surveyed Lithuanian residents aged 15–74 claimed to be more or less frequent consumers of organic food, either purchased or home-grown. However, 7% of Lithuanian residents do not consume organic food. Among all the respondents, a slightly higher frequency in organic food consumption was found in females – 54%, middle-aged residents (35–64 years) – 48%, employed – 55%, rural residents – 35%. Organic food was not consumed by 64% of men, younger (15–34 years) – 50% and urban residents of largest Lithuanian cities – 52% (Skulskis, Girgėdienė, 2009).

Results of a survey conducted in Lithuania in 2007 has shown that consumption of organic products is directly related to incomes. Most of these products were consumed by families with an average income of 900 Lt per one family member. Even 76% of Lithuanian residents consume purchased organic food, 1/3 of them (32%) consume organic food on a regular basis or frequently and about 35% rarely. Home-grown organic food was consumed by 75% of the respondents. Half of them (47%) have claimed that they consume these products regularly or frequently, and about 1/4 of them (23%) – only during the season (Skulskis, Girgėdienė, 2009).

### Places of purchasing organic food

Most commonly our respondents buy organic food products at supermarkets (83.6%), fewer at farmers' markets (34.1%) or food fairs (11.8%), or at other places (e. g., specialised stores) (14.9%) (Čiukienė, 2006). The questionnaire included a few options for the respondents to indicate a number of places where they purchase organic food.

Of the surveyed organic food consumers, 3.1% do not buy these products at all. Assumingly, they consume their own home-grown organic food. With reference to a survey conducted from 2004 to 2006, 67% of the respondents purchased organic food at shopping malls and 27% at markets (Rutkoviėnė, Garliauskienė, 2007). Likewise, in France the majority of people also bought organic foods at supermarkets (75%), fewer at farmers' markets (37%), specialised stores (30%), organic farms (23%) (Centre for Agricultural Information..., 2008).

Men were significantly more frequent buyers of organic foods at supermarkets ( $p = 0.017$ ,  $\chi^2 = 5.737$ ,  $df = 1$ ), farmers' markets ( $p = 0.003$ ,  $\chi^2 = 8.709$ ,  $df = 1$ ) and food fairs ( $p = 0.000$ ,  $\chi^2 = 13.965$ ,  $df = 1$ ), whereas women statistically significantly more frequently purchased them at other places ( $p = 0.026$ ,  $\chi^2 = 4.978$ ,  $df = 1$ ). Younger respondents were more frequent buyers at supermarkets; however, the difference was not statistically significant relevant ( $p = 0.583$ ,  $\chi^2 = 1.079$ ,  $df = 2$ ). Yet, statistically significant frequency in purchasing

organic foods was observed in the 50–78-year group – they purchased at the market ( $p = 0.004$ ,  $\chi^2 = 11.131$ ,  $df = 2$ ) and at food fairs ( $p = 0.000$ ,  $\chi^2 = 20.188$ ,  $df = 2$ ). Respondents aged 35–49 were more frequent buyers at other sites, however, no significant associations were found ( $p = 0.179$ ,  $\chi^2 = 3.438$ ,  $df = 2$ ). Respondents with university (16.3%) and college (15.2%) education bought more frequently at food fairs. Those with university education (22.7%) showed a greater frequency in buying at other places; however, the difference was statistically irrelevant ( $p = 0.068$ ,  $\chi^2 = 10.285$ ,  $df = 5$ ). Respondents bought equally frequently at both supermarkets and farmers' markets, nevertheless, no significant correlation between the two was observed.

Respondents with higher incomes were more frequent purchasers of organic foods at food fairs (21.6%) and showed a statistically significant difference ( $p = 0.000$ ,  $\chi^2 = 24.061$ ,  $df = 3$ ). No relevant correlation was found between those with lower incomes and the place of purchase of organic foods. An equal purchasing frequency was found in respondents at shopping malls ( $p = 0.798$ ,  $\chi^2 = 1.015$ ,  $df = 3$ ), whereas those with lowest incomes were least frequent buyers at markets ( $p = 0.191$ ,  $\chi^2 = 4.749$ ,  $df = 3$ ).

According to our study, 47.5% of the surveyed reported a limited availability of organic food. Namely, nearly half of the respondents would appreciate a wider range of organic foods to satisfy their needs. The difference between females (55.5%) and males (33.2%) in this respect was statistically significant ( $p = 0.000$ ,  $\chi^2 = 23.564$ ,  $df = 1$ ). The most frequently mentioned shortage was that of vegetables, fruit, meat and dairy products. Similar findings were obtained in former studies (Rutkoviėnė, Garliauskienė, 2007). The Netherlands, for instance, are short of organic milk (Centre for Agricultural Information..., 2008). The respondents emphasized a narrow range of available organic foods (Čiukienė, 2006). People aged 18 to 34 (51.1%) mentioned a statistically insignificant increase in the shortage of organic food ( $p = 0.103$ ,  $\chi^2 = 4.550$ ,  $df = 2$ ). Respondents with higher and high education (52.8% and 48.1%, respectively) indicated a more frequent shortage of organic foods rather than those with other type of education; however, the correlation was statistically insignificant ( $p = 0.252$ ,  $\chi^2 = 6.600$ ,  $df = 5$ ). Overall, the findings revealed that the most shortage of organic foods was found in respondents with highest incomes (52.8%).

Even though the trade in organic food in Lithuania is widespread in food fairs and farmers' markets, 67% of the respondents are likely to purchase in supermarkets due to a wider range of products, better choice facilities and convenience (Rutkoviėnė, Garliauskienė, 2007).

Ramanauskienė and Gargasas (2008) researched the organic food market supply, sale possibilities and prospects in Lithuania. According to their findings, direct sale of organic food to customers prevails in food fairs and farmers' markets: 75% of eggs, 73% of vegetables, 63% of poultry, 59% of fruit are sold there (Ramanauskienė, Gargasas, 2008).



### Awareness and assessment of organic foods

Our survey revealed the respondents to be well aware of organic foods: 87.4% of the respondents were aware of organic food labelling, whereas in 2004–2006 only 60% of the consumers were aware of organic food (Rutkoviene, Garliauskienė, 2007; Alborovienė, 2005); 21.4% of the consumers reported the taste to be a distinctive feature, 16.3% indicated appearance and 9.7% flavour; 86.7% of females and 88.6% of males distinguished organic foods by label; however, the difference was statistically insignificant ( $p = 0.530$ ,  $\chi^2 = 0.394$ ,  $df = 1$ ). Respondents with university education (91.6%) showed a higher frequency in distinguishing organic foods by label, though the difference was statistically irrelevant ( $p = 0.085$ ,  $\chi^2 = 9.660$ ,  $df = 5$ ).

In 2006, Lithuanian Consumer Institute analysed the residents' awareness and knowledge of organic food and its consumption. The research focused on the distinctive features that enabled the residents with different social background, age, education, income and residential place to identify organic foods. The findings revealed that organic food products were consumed by 59% of the respondents; (the majority of them were aged under 39), university degree holders, people with a higher income, residents of larger cities. A great number of respondents were able to identify and distinguish organic food products (Ekologiškų produktų..., 2006).

Similar results have been presented by other authors. Skulskis and Girgždienė (2009) revealed that alongside with the increasing level of education, the interest in organic food also grows: even 69.2% of people with university education exhibit their interest in organic food. Close relatives, friends, acquaintances, family members were among the most frequent information providers: 65% of the respondents were informed by these people. The second most frequent source of information was product labels, mentioned by 58% of respondents. It was followed by the national and commercial TV (respectively 57% and 56% of respondents). A similar number of respondents (54%) indicated that they had receive information in supermarkets and other shopping places. About 1/4 of respondents were provided with information by the Internet, whereas 13% had been informed at seminars, conferences or food fairs (Skulskis, Girgždienė, 2009).

Our findings revealed an increasing number of people aware of organic foods and able to distinguish them from other food products.

### Demand for information on organic food

Even though a great majority of the surveyed were able to identify organic foods, 72.6% of respondents expressed a lack of information on organic foods; 27.4% found the information to be sufficient, whereas in a former survey, sufficient information on organic food was reported only by 8% of respondents (Čiukienė, 2006). In 2007, 56% of respondents reported a lack of information on organic foods, their properties and benefits (Rickuvienė, 2007). Women (80.9%) showed a significantly stronger demand of information on organic foods than did men (57.6%) ( $p = 0.000$ ,  $\chi^2 = 32.218$ ,  $df = 1$ ). Also, 78.0% of respondents aged 18–35 showed a more frequent demand of information on organic foods than did senior respondents. This difference was statistically significant ( $p = 0.002$ ,  $\chi^2 = 12.980$ ,  $df = 2$ ). Those with secondary (76.7%) and college education (75.3%) were more frequent in need for more information on organic foods; however, the difference was not statistically significant ( $p = 0.393$ ,  $\chi^2 = 5.191$ ,  $df = 5$ ). The strongest demand for information was expressed by respondents with average monthly incomes (77.8%); however, the difference was statistically insignificant ( $p = 0.343$ ,  $\chi^2 = 3.337$ ,  $df = 3$ ). Those with lowest incomes reported to have sufficient information (33.3%).

With reference to a survey conducted in Lithuania in 2007, 48% of the local respondents claim a sufficient amount of information on organic food. However, the senior age category of respondents complained about insufficient information or a great lack of information on organic food. People who emphasized insufficient information (a great lack or delayed information) in most cases mentioned a lack of information on the product manufacturing or growth conditions (49%), places of selling these products (47%), the composition of these products (43%). According to our research, urban residents express a stronger demand of information on organic food (Skulskis, Girgždienė, 2009).

### Reasons for organic food consumption

The prevailing reasons for organic food consumption are as follows: safety – 27.3%, healthiness – 90.0%, good taste – 38.9%, other – 3.6%. Men are significantly more frequent consumers because of better taste ( $p = 0.002$ ). Apart from that, safety of organic foods was emphasized by a greater number of men than women; however, the difference was not statistically significant ( $p = 0.210$ , Table 1).

Table 1. Reasons for organic food consumption with respect to sex

Reasons for consumption	Sex				P value ( $p \leq 0.05$ )	$\chi^2$	df
	Women n = 291		Men n = 131				
	Abs. No	%	Abs. No	%			
Security	74	25.4	41	31.3	0.210	1.569	1
Healthiness	263	90.4	117	89.3	0.735	0.114	1
Good taste	99	34.0	65	49.6	0.002*	9.250	1
Other	9	3.1	6	4.6	0.445	0.583	1

\* Statistically significant difference.

Respondents aged 35–49 chose organic food products for their safety, healthiness and good taste more frequently than those of other age groups; however, the difference was not statistically significant ( $p > 0.05$ ). Respondents with high and very low incomes showed a statistically significant difference in their more frequent choice of organic foods because of their security ( $p = 0.055$ ,  $\chi^2 = 7.611$ ,  $df = 3$ ), but the difference as regards their healthiness was statistically insignificant ( $p = 0.492$ ,  $\chi^2 = 2.407$ ,  $df = 3$ ). A more frequent choice because of good taste was observed in respondents with highest incomes; however, they did not differ significantly ( $p = 0.733$ ,  $\chi^2 = 1.284$ ,  $df = 3$ ).

However, there was a statistically significant correlation between those consuming organic food and their education. Respondents with vocational and higher education were significantly more frequent organic food consumers by healthiness ( $p = 0.042$ ,  $\chi^2 = 11.531$ ,  $df = 5$ ). Those with university education appeared to be more frequent consumers because organic foods are safer. However, statistically, we observed no relevant difference ( $p = 0.072$ ,  $\chi^2 = 10.125$ ,  $df = 5$ ). Moreover, there was no significant correlation between education and a taste-related preference of organic foods ( $p = 0.404$ ,  $\chi^2 = 5.095$ ,  $df = 5$ ).

Other scientists have investigated the major motivating factors in Lithuanian residents who consume organic food, and found that the main reasons for organic food consumption were caring for their own health and the health of their family members (85%), a higher content of nutrients and vitamins than in those grown traditionally (80%), better taste and flavour (56.3%), the questionable quality of several traditional food products ((43.5%) (Čiukienė, 2006).

Former investigations of organic food market have shown that the most motivating factors of organic food consumption were product's safety, quality, better taste and environmental protection: 59% of respondents identified these products by their organic food trademarks (Rutkovienė, Garliauskienė, 2007).

The most frequent motivating factors influencing the purchase of organic food products were as follows: environmental protection (58%), support for small-scale local farmers (57%), care for one's own health (54%), better quality of products (42%) and better taste (32%) (Organic Food & Beverage Trends, 2004). Zanolì et al. (2007), upon conducting a research in eight European Union countries (Austria, Czech Republic, Denmark, Italy, the United Kingdom, France, Finland and Germany) noted that organic food has gained a considerable share in the market of European food products. In consumers' opinion, the quality and safety of organic food products have a direct impact on health, environmental protection and consumption ethics (Zanolì et al., 2007).

Rosa, Briz and Mili (2008) who had conducted a survey of milk consumers in the Oport region of Portugal stated that 20% of the respondents were unaware of organic food, 36% – knew very little or little and only 8% were able to describe organic food products. Half of the respondents agreed to pay 10–25%

more for organic milk; however, only 1/4 of them were regular organic milk consumers. The authors have concluded that the increasing public education on environmental and lifestyle quality issues is likely to stimulate a considerable growth in organic milk consumption (Rosa et al., 2008).

Naspetti, Bracchi and Zanolì have conducted a research in Italy and revealed that organic food for its regular consumers is associated with health and better wellbeing, whereas for non-regular consumers it means familiarising with better quality products. Regular consumers rely on the healthiness and benefit of organic food products, whereas non-regular consumers appreciate on only their better taste and better quality in general (Naspetti, Bracchi, Zanolì, 2008).

### Reasons for the absence of organic food consumption

The reasons why some of respondents did not consume organic food products were as follows: too expensive (53.3%), not tasty (5.4%), shorter expiry period (21.7%), inability to distinguish between organic and conventional products (28.3%), others (13.0%).

Men significantly more frequently do not consume organic foods because the latter are more expensive ( $p < 0.05$ ) and because their expiry period is shorter ( $p < 0.05$ ). A statistically significant difference was observed in women who showed a more frequent absence of consumption. They were not sure which foods were organic ( $p < 0.05$ ).

Respondents with higher education do not consume organic foods because their expiry period is shorter ( $p = 0.242$ ,  $\chi^2 = 6.721$ ,  $df = 5$ ), and those with secondary and higher education show a more frequent absence of consumption because they do not know which foods are organic ( $p = 0.135$ ,  $\chi^2 = 8.417$ ,  $df = 5$ ). However, there was no statistically significant correlation between education and the absence of organic food consumption.

According to findings of other authors, 60% of respondents cite higher prices to be one of the main reasons restricting the demand of organic foods in Lithuania. Other reasons preventing customers from consuming these products are insufficient publicity, limited supply (28% of the respondents each), misleading branding (21%) (Rutkovienė, Abraitytė, 2006).

A survey conducted in 2007 revealed that the consumption of organic food was most commonly limited by too high prices: 61% of organic food consumers would consume these products more frequently, 42% of those who did not consume them would start doing so if the prices of these products were lower (Skulskis, Girgždienė, 2009).

According to our findings, higher prices of organic food products remain to be the major factor limiting its consumption.

### Kinds of purchased organic foods

Respondents purchase the following kinds of organic foods: fruit, berries, vegetables (71.8%), teas (42.9%), dairy products (57.6%), cooking oil (24.6%), eggs (28.7%), meat products

(29.9%), confectionery (9.2%), bread and other bakery products (49.3%), pasta (12.6%), spices (13.3%), other products (enlisted by respondents) such as honey, medicinal plants, cereals (7.8%).

Women significantly more often than men purchase fruit, berries and vegetables ( $p = 0.010$ ), eggs ( $p = 0.002$ ), spices ( $p = 0.022$ ). Men significantly more frequently buy bread and other bakery products ( $p = 0.002$ ) (Table 2).

Respondents aged 50–78 are significantly more frequent buyers of fruit, berries, vegetables ( $p = 0.001$ ), bread and other bakery products ( $p = 0.007$ ) (Table 3). Eggs are more frequently purchased by respondents aged 18–34, however, the difference is statistically not significant ( $p = 0.329$ ). People aged 35–49 buy insignificantly less fruit, berries, vegetables, teas, pasta, spices, confectionery products ( $p > 0.05$ ) (Table 3).

Respondents with monthly incomes over 1501 Lt were significantly more frequent purchasers of bread and other bakery products ( $p = 0.043$ ,  $\chi^2 = 8.142$ ,  $df = 3$ ). Those with the lowest incomes gave preference to fruit, berries, vegeta-

bles ( $p = 0.686$ ,  $\chi^2 = 1.484$ ,  $df = 3$ ), teas ( $p = 0.523$ ,  $\chi^2 = 2.247$ ,  $df = 3$ ), pasta ( $p = 0.478$ ,  $\chi^2 = 2.486$ ,  $df = 3$ ); however, no statistically significant association was observed (Table 4). Moreover, other groups of respondents with other levels of incomes did not differ significantly with respect to the purchase of organic food. Nevertheless, our findings reveal that those with incomes of 501–1000 Lt tend to buy spices ( $p = 0.266$ ,  $\chi^2 = 3.956$ ,  $df = 3$ ), eggs ( $p = 0.961$ ,  $\chi^2 = 0.293$ ,  $df = 3$ ), and those on incomes over 1501 Lt prefer dairy products ( $p = 0.354$ ,  $\chi^2 = 3.258$ ,  $df = 3$ ), cooking oil ( $p = 0.161$ ,  $\chi^2 = 5.149$ ,  $df = 3$ ), meat products ( $p = 0.206$ ,  $\chi^2 = 4.567$ ,  $df = 3$ ), confectionery ( $p = 0.184$ ,  $\chi^2 = 4.838$ ,  $df = 3$ ), other products ( $p = 0.113$ ,  $\chi^2 = 5.981$ ,  $df = 3$ ).

Respondents with university and college education significantly more frequently buy meat products ( $p = 0.040$ ,  $\chi^2 = 11.644$ ,  $df = 5$ ). People with primary, basic and secondary education are more frequent purchasers of fruit, berries, vegetables ( $p = 0.522$ ,  $\chi^2 = 4.192$ ,  $df = 5$ ); respondents with secondary and university education prefer pasta ( $p = 0.776$ ,  $\chi^2 = 2.503$ ,  $df = 5$ ), spices ( $p = 0.476$ ,  $\chi^2 = 4.529$ ,  $df = 5$ ), with

Table 2. Choice of organic food products with respect to sex

Purchased products	Sex				$p \leq 0.05$	$\chi^2$	df
	Women n = 291		Men n = 131				
	Abs. No.	%	Abs. No.	%			
Fruit, berries, vegetables	220	75.6	83	63.4	0.010*	6.687	1
Teas	124	42.6	57	43.5	0.863	0.030	1
Dairy products	171	58.8	72	55.0	0.465	0.534	1
Cooking oil	78	26.8	26	19.8	0.125	2.354	1
Eggs	97	33.3	24	18.3	0.002*	9.955	1
Meat products	84	28.9	42	32.1	0.507	0.440	1
Confectionery	26	8.9	13	9.9	0.746	0.105	1
Bread and other bakery products	129	44.3	79	60.3	0.002*	9.224	1
Pasta	40	13.7	13	9.9	0.273	1.202	1
Spices	46	15.8	10	7.6	0.022*	5.244	1
Other	19	6.5	14	10.7	0.141	2.166	1

\* Statistically significant difference.

Table 3. Choice of organic foods with respect to age groups

Purchased products	Age groups						$p \leq 0.05$	$\chi^2$	df
	18–34 years n = 277		35–49 years n = 104		50–78 years n = 41				
	Abs. No.	%	Abs. No.	%	Abs. No.	%			
Fruit, berries, vegetables	210	75.8	60	57.7	33	80.5	0.001*	13.954	2
Teas	117	42.2	41	39.4	23	56.1	0.176	3.478	2
Dairy products	160	57.8	62	59.6	21	51.2	0.651	0.859	2
Cooking oil	69	24.9	25	24.0	10	24.4	0.984	0.032	2
Eggs	86	31.0	25	24.0	10	24.4	0.329	2.223	2
Meat products	77	27.8	32	30.8	17	41.5	0.198	3.239	2
Confectionery	28	10.1	4	3.8	7	17.1	0.032*	6.856	2
Bread and other bakery products	122	44.0	59	56.7	27	65.9	0.007*	9.855	2
Pasta	36	13.0	9	8.7	8	19.5	0.192	3.297	2
Spices	41	14.8	9	8.7	6	14.6	0.279	2.556	2
Other	18	6.5	8	7.7	7	17.1	0.063	5.544	2

\* Statistically significant difference.

Table 4. Choice of organic foods with respect to income

Purchased products	Incomes								p ≤ 0.05
	<500 Lt n = 18		501–1000 Lt n = 118		1001–1500 Lt n = 174		>1501 Lt n = 112		
	Abs. No	%	Abs. No	%	Abs. No	%	Abs. No	%	
Fruit, berries, vegetables	14	77.8	80	67.8	127	73.0	82	73.2	0.686
Teas	10	55.6	51	43.2	69	39.7	51	45.5	0.523
Dairy products	11	61.1	69	58.5	92	52.9	71	63.4	0.354
Cooking oil	5	27.8	27	22.9	36	20.7	36	32.1	0.161
Eggs	5	27.8	35	29.7	51	29.3	30	26.8	0.961
Meat products	4	22.2	28	23.7	54	31.0	40	35.7	0.206
Confectionery	1	5.6	8	6.8	14	8.0	16	14.3	0.184
Bread and other bakery products	9	50.0	53	44.9	78	44.8	68	60.7	0.043*
Pasta	4	22.2	12	10.2	21	12.1	16	14.3	0.478
Spices	1	5.6	18	15.3	18	10.3	19	17.0	0.266
Other	2	11.1	5	4.2	12	6.9	14	12.5	0.113

\* Statistically significant difference.

higher – teas ( $p = 0.390$ ,  $\chi^2 = 5.221$ ,  $df = 5$ ), college and university – dairy products ( $p = 0.099$ ,  $\chi^2 = 9.267$ ,  $df = 5$ ), eggs ( $p = 0.554$ ,  $\chi^2 = 3.970$ ,  $df = 5$ ), university education – cooking oil ( $p = 0.543$ ,  $\chi^2 = 4.048$ ,  $df = 5$ ), college and university education and vocational education – confectionery products ( $p = 0.949$ ,  $\chi^2 = 1.152$ ,  $df = 5$ ), vocational education – bread and other bakery products ( $p = 0.133$ ,  $\chi^2 = 8.453$ ,  $df = 5$ ).

Other authors also indicate vegetables, berries and fruit, dairy, corn products and honey to be among the most popular organic food groups (Rutkovienė, Garliauskienė, 2007).

## CONCLUSIONS

1. Organic food products are consumed by 82.1% of the surveyed residents of Vilnius city; however, their consumption is rare, usually two or three times per week (37.2%), whereas the rest of the respondents are even less frequent consumers. Organic food is consumed by more women than men; however, males are more frequent consumers of organic food.

2. Younger age residents, those with a higher income, with university or vocational education are significantly more frequent consumers of organic food.

3. Residents consume organic food because it is healthier. No statistically significant correlation was observed between age groups and incomes and the consumption of organic foods.

4. In most cases, the prevailing reason for the absence of organic food consumption is its high price.

5. Most frequently bought products are organic fruit, berries, vegetables, dairy products, bread and other bakery products, teas, whereas, confectionery, pasta, spices, other food products like honey, cereals, medicinal plants were rated as least bought.

6. Almost half of respondents feel a lack of availability of organic foods; women are significantly higher in their demand. Among the least available were vegetables, fruit, berries, meat and dairy products. A more frequent demand

was expressed by respondents with university and college education.

7. The majority of respondents buy organic foods at supermarkets. Elderly people significantly more frequently buy foods on farmers' markets, food fairs, whereas younger respondents, insignificantly more often, prefer supermarkets.

8. The majority of respondents are aware that organic food products can be distinguished from ordinary ones by a label.

9. Of the respondents, feel 72.6% the lack of information on organic food products, and whereas only one third of them are satisfied with the information. Women (80.9%) and younger respondents (78.0%) note a significantly more frequent lack of information on organic food products.

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Rimantas Stukas, Genė Šurkienė, Rūta Dubakienė,  
Reda Nagytė, Marius Baranauskas

### VILNIAUS MIESTO (LIETUVA) SUAUGUSIŲ GYVENTOJŲ EKOLOGIŠKŲ MAISTO PRODUKTŲ VARTOJIMO IR POŽIŪRIO Į JUOS TYRIMAS

#### Santrauka

Ekologiškų maisto produktų nauda yra didelė, tačiau apie tai turi būti nuolat kalbama, stengiantis padėti visuomenei suprasti ekologiškų produktų vartojimo svarbą. Nors ekologiški maisto produktai ženklina etiketėse, svarbu išsiaiškinti, kiek žmonės žino apie ekologiškus produktus, jų naudą organizmui, kaip dažnai, dėl kurių priežasčių juos vartoja (ar neverta), kur perka, kaip vertina, ar pasigenda jų, ar žino, kaip atskirti ekologiškus maisto produktus nuo neekologiškų, ar lengvai jų randa, ar pakanka informacijos apie ekologiškus produktus, iš kur apie juos sužino, ar pirktų daugiau ekologiškų produktų, jeigu jie būtų pigesni. Tai ir nulėmė mūsų darbo tikslą – ištirti Vilniaus miesto suaugusių gyventojų ekologiškų maisto produktų vartojimą ir požiūrį į juos.

Nustatėme, kad gyventojai vartoja ekologiškus maisto produktus, nes jie yra sveiki, o neverta, nes per brangūs. Statistiškai reikšmingai daugiau moterų negu vyrų vartoja ekologiškus maisto produktus, tačiau vyrai juos vartoja statistiškai reikšmingai dažniau nei moterys. Taip pat statistiškai reikšmingai daugiau jaunesnio amžiaus gyventojų vartoja ekologiškus maisto produktus. Dažniausiai šiuos produktus gyventojai perka prekybos centruose ir žino, kaip atskirti ekologiškus maisto produktus, tačiau daugumai gyventojų vis dar trūksta informacijos apie ekologiškus produktus. Kaip rodo mūsų tyrimo rezultatai, dažniausia ekologiško maisto produktų nevertojimo priežastis ir toliau išlieka didelė šių produktų kaina.

**Raktažodžiai:** mityba, ekologiški produktai