

## **The Use of Sheep Meat in the Diet of Consumers of Polish and Armenian Origin**

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The production of sheep meat, in the global scale, is low and accounts for about 3.2%. The consumption of lamb or mutton meat depends to a large extent on the tradition of the consumption, lifestyle and even wealth of the consumers. Sheep meat, especially lamb meat, is considered a luxury product (Niżnikowski, 2001). It is characterised by high quality in terms of physical characteristics, chemical composition as well as the content of numerous bioactive compounds important from the point of view of human health (Kędzior, 2005; Wood et al., 2008, Milewski, 2006; Patkowska-Sokoła et al., 2004; Radzik-Rant, 2008, Schmid et al., 2006). Consumer preferences of this type of meat differ significantly. These differences pertain to the size of carcasses, the method of maintaining and feeding slaughter lambs and traditions prevailing in the defined geographical area. In the Mediterranean countries, as a result of dairy use of sheep, lightweight carcasses (6-10 kg) are preferred, the meat of which is characterised by greater delicacy whereas in Central and Northern Europe (Belgium, Germany or Great Britain), carcasses weighing 18 -22 kg are of greater interest. In distant countries, such as Australia and New Zealand, carcasses are even heavier (around 40 kg) (Font and Furnols et al., 2006, Skapetes et al., 2006). Among consumers in these countries, meat with a more intense aroma, a distinctive taste and a darker colour is also more popular in contrast to the culinary preferences of consumers from the United States and Southern Europe (Martinez-Moreno et al., 2005; Font and Furnols et al. 2006). Lamb meat grazed in the pastures is largely appreciated. It is usually darker due to the higher myoglobin content in the muscles but may have better health values. Meat of sheep kept mainly in the pasture is characterised by a higher content of intramuscular fat in polyunsaturated fatty acids (PUFA), belonging to the *n-3* family and, therefore, a more favourable ratio of omega-6 to omega-3 (Arousseau et al., 2004; Radzik-Rant, 2008).

For sheep meat consumers, the region from which it originates is often not without significance. They value meat bearing a protected geographical origin (PGI) as well as a protected designation of origin (PDO), identifying such a product with high quality (Bernués et al., 2012, Sepúlveda et al., 2010).

The various consumer preferences on the sheep meat market entail a varied consumption. In comparison to meat from other animal species, it is very low. The exceptions are countries of Northern Europe, such as Greenland and Iceland, and the Mediterranean countries, where the rate of lamb consumption can be considered high (an average of about 10 kg / per person) (Niżnikowski, 2011). The consumption of sheep meat in Poland is small and amounts to only 0.044 kg / person / year (Bancewicz et al., 2016). Whether the reason for low consumption (not only in our country) are cultural conditions, the high price of this meat, or low awareness of the quality of lamb and its undeniable health values are questions that should be answered by the consumers.

The purpose of the study was to assess the use of sheep meat in the diet of Poles and Armenians living in our country and the awareness of its quality and pro-health values.

## Materials and methods

The research was conducted in the form of a questionnaire, consisting of 21 questions (some of them were multiple choice questions) addressed to Poles and Armenians living in Poland. The respondents participating in the survey were diversified in terms of sex, age, place of residence, education and financial status. In total, 161 respondents took part in the survey, of which 104 were Poles, and 57 of the Armenian origin.

The questions included in the questionnaire, apart from the characteristics of the respondents, pertained to sheep meat consumption, the reasons for both consumption and non-consumption, the frequency and place of purchase, the method of preparation, the use of favourite parts of the carcass and the opinions on the price of this meat type. An important element of the questionnaire addressed to sheep meat consumers were questions to get information about their knowledge of the nutritional value of this meat species, its health benefits and the bioactive ingredients found in it.

A quantitative analysis of the collected material was carried out, summing up the responses and calculating their percentage share, taking into account the nationality of the respondents.

## The results and their discussion

### *Characteristics of the surveyed respondents*

Most of the respondents were women regardless of the nationality group, although the difference in the proportion of women and men in the Armenian respondents (57.4% vs. 42.6%) was lower than in the Poles (Tab. 1). The age of all the respondents fluctuated between under 25 and 65 years of age. In the group of Poles, the vast majority were young people up to 25 years old (81.6%) while a greater diversity in this area was demonstrated in the Armenian group. In the age ranges of 26-35 and 36-45 years old Armenian respondents were about 10% more than Poles. Most people taking part in the study came from towns above 100,000 inhabitants, then 10-100 thousand residents, and then villages and towns up to 10,000 residents.

Table 1. The characteristics of respondents (%)

<i>Item</i>	<i>Polish</i>	<i>Armenians</i>
<i>Sex:</i>		
<i>Women</i>	68,0	57,4
<i>Men</i>	32,0	42,6
<i>Age:</i>		
> 25	81,6	48,1
26–35	10,6	20,4
36–45	4,9	14,8
46–55	1,0	11,1
56–65	1,9	5,6
<i>Place of residence</i>		
<i>Village</i>	14,6	3,7
<i>Up to 10 thous. inhabitants</i>	5,8	9,3
<i>From 10 to 100 thous. inhabitants</i>	46,6	22,2
<i>Over 100 thous. inhabitants</i>	33,0	64,8
<i>Education</i>		
<i>Basic</i>	–	3,7
<i>Zawodowe – Vocational</i>	1,9	1,9
<i>Secondary</i>	70,9	37,0
<i>Higher</i>	27,2	57,4
<i>Financial status</i>		
<i>Very good</i>	1,9	9,3
<i>Good</i>	53,4	66,7
<i>Average</i>	42,8	24,0
<i>Poor</i>	1,9	–

About 65% of Armenians were residents of large cities; a higher variability regarding the place of residence was demonstrated in the group of Poles. The dominance of secondary education was found among the respondents of Polish origin while the respondents from Armenia had higher education in about 60%. This may be related to the emigration of young people from Armenia in the 90s in order to study at universities in Europe who, after graduation, stayed in Poland. The respondents most often declared their financial status as good. Only two people in the group of Polish respondents indicated a low financial status (tab. 1).

### ***The use of sheep meat***

In the analysis, more than half (64.6%) of the respondents declared consumption of sheep meat, with half of the respondents in the Polish origin group, and almost 95% in the Armenian origin (fig. 1). All the subjects consumed both lamb and mutton meat.

The most frequently mentioned reasons for not eating sheep meat in the group of Poles was the lack of tradition, not without significance was also its price, and in the responses marked as “other” they indicated the poor availability of this type of meat (fig. 2). The price as a barrier to the consumption of lamb was also given by Brazilian consumers of this type of meat (Cunha de Andrade et al., 2016). On the other hand, the availability of rabbit meat, similar to sheep meat, a lower share in the diet of Poles, was signalled by consumers in studies carried out by Pomianowski and others. (2015). In the Armenian group, the non-consumption of lamb or mutton was associated primarily with a lifestyle based on the use of a vegetarian diet. Some also pointed to the taste of sheep meat as the reason for not consuming it (fig. 2).

At the same time, the main reason for consuming sheep meat according to the surveyed respondents was its palatability. In both groups, attention was paid to the quality and delicacy of lamb meat. The Armenians more often than Poles gave the answer regarding its health values (fig. 3). In research carried out by Sepúlveda et al. (2010) the quality of lamb at the time of purchase was also an important criterion for Spanish consumers and producers. In other surveys concerning consumer opinions on the food market - nutritional value and high quality of rabbit, poultry or pork meat or other food products was also most often indicated as a factor determining the meat preference (Makała, 2004; Pomianowski et al., 2015; Batorska et al., 2016). In the “other” answers, Polish respondents pointed to the difference of this meat from poultry. The Armenians, on the other hand, stated that sheep meat was associated with their childhood and the tradition of its consumption.

The tradition of using sheep meat in the Armenian diet may be demonstrated by the most frequent answer in this group of respondents that they have been eating this kind of meat forever (92.2%). Poles (51% of respondents) have been more familiar with this type of meat since the time it has become more available (Figure 4). It can be assumed that this situation results from the small production of sheep meat in Poland as compared to the production of pork or poultry meat, whose consumption in our country is at a much higher level (Batorska et al., 2016). The non-existence of the tradition of eating lamb or mutton meat in Poland may be indicated by answers of respondents (about 8%) who say that they started eating sheep meat only after learning about its values while staying in other countries, including Croatia and Italy.

The low availability of sheep meat in Poland, as well as its lower use in diet may be indicated by the frequency of consumption declared by the respondents. Half of Polish respondents answered that they eat this meat once a month and a quarter eat it once a year. In the Armenian group, except the once a month (about 37%) and once a week (about 20%) answers, in the “other” (27.5%) responses there were people declaring sheep meat consumption 4-5 times a month, several times a year or whenever the opportunity arises (fig. 5). In the studies of Cunha de Andrade et al. (2016) Brazilian consumers perceived lamb as a product only for special occasions. In research conducted by Batorska et al. among students, breast broiler meat was consumed much more often (3-4 times a week). (2016). In the same research, the respondents declared occasional consumption of turkey meat and, even rarer, goose meat, whose consumption tradition, like sheep meat, is also missing in our country.

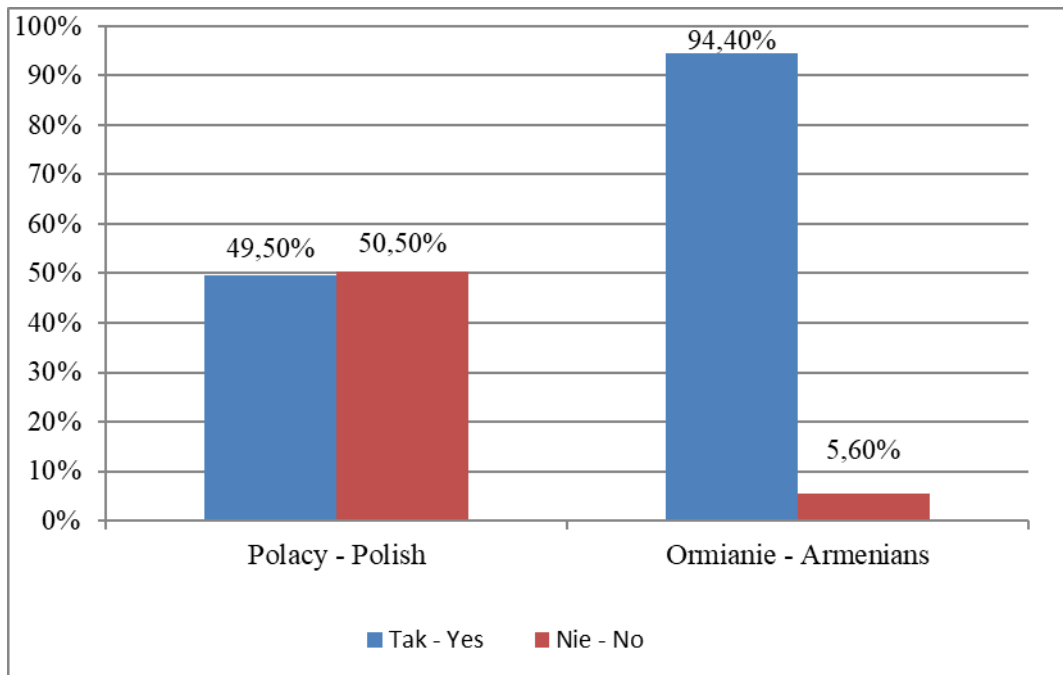


Figure 1. Do you eat sheep meat?

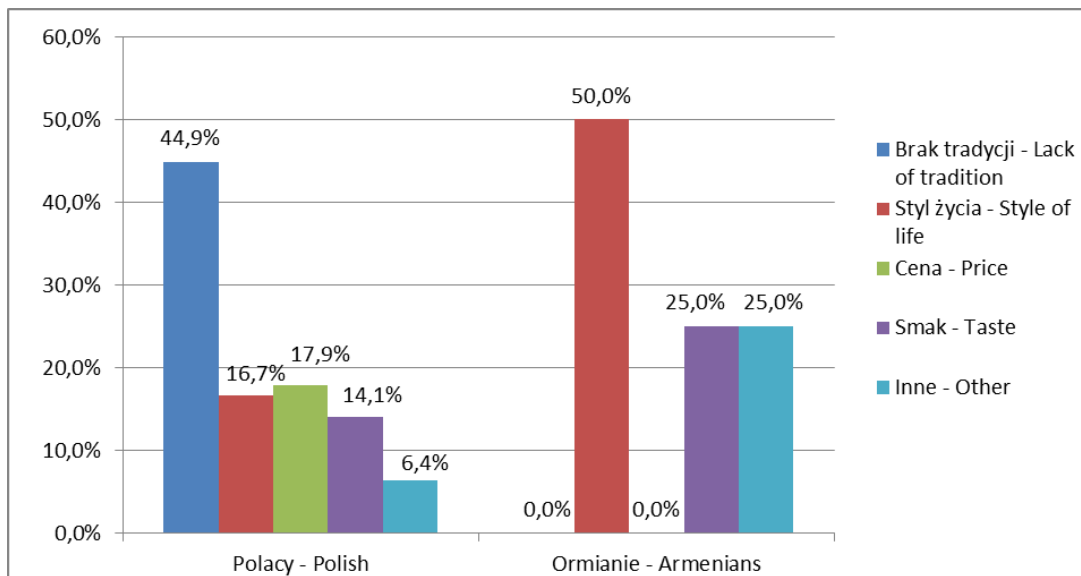


Figure 2. The reasons for not eating sheep meat depending on nationality

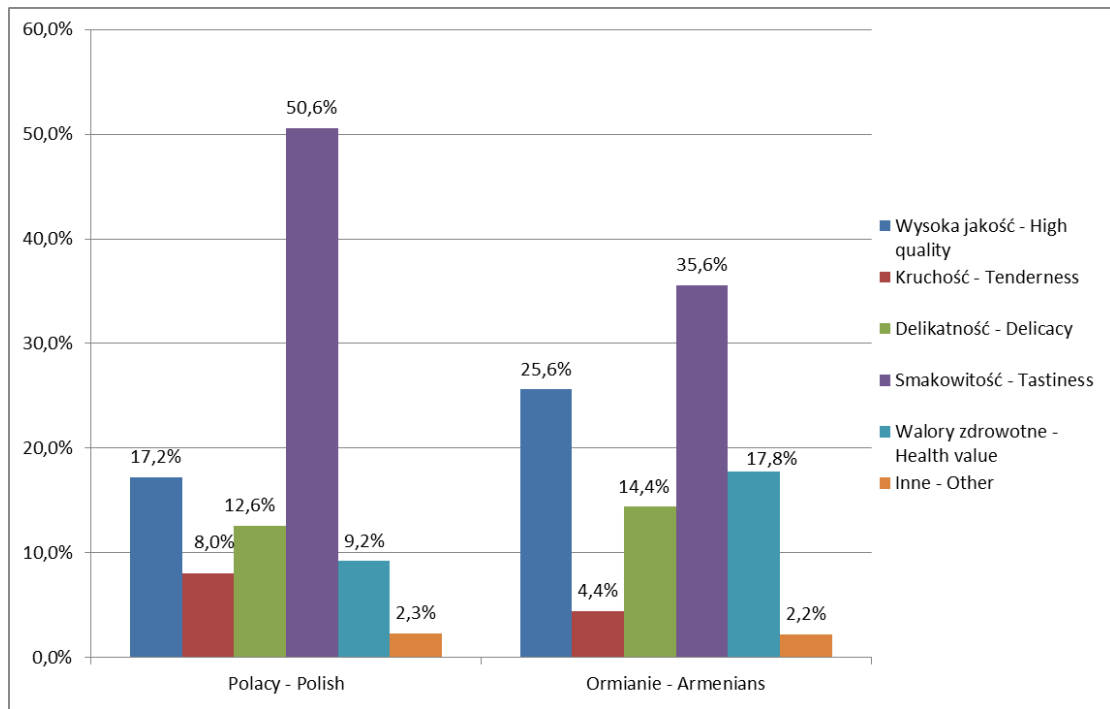


Figure 3. The reasons for eating sheep meat within the studied nationalities

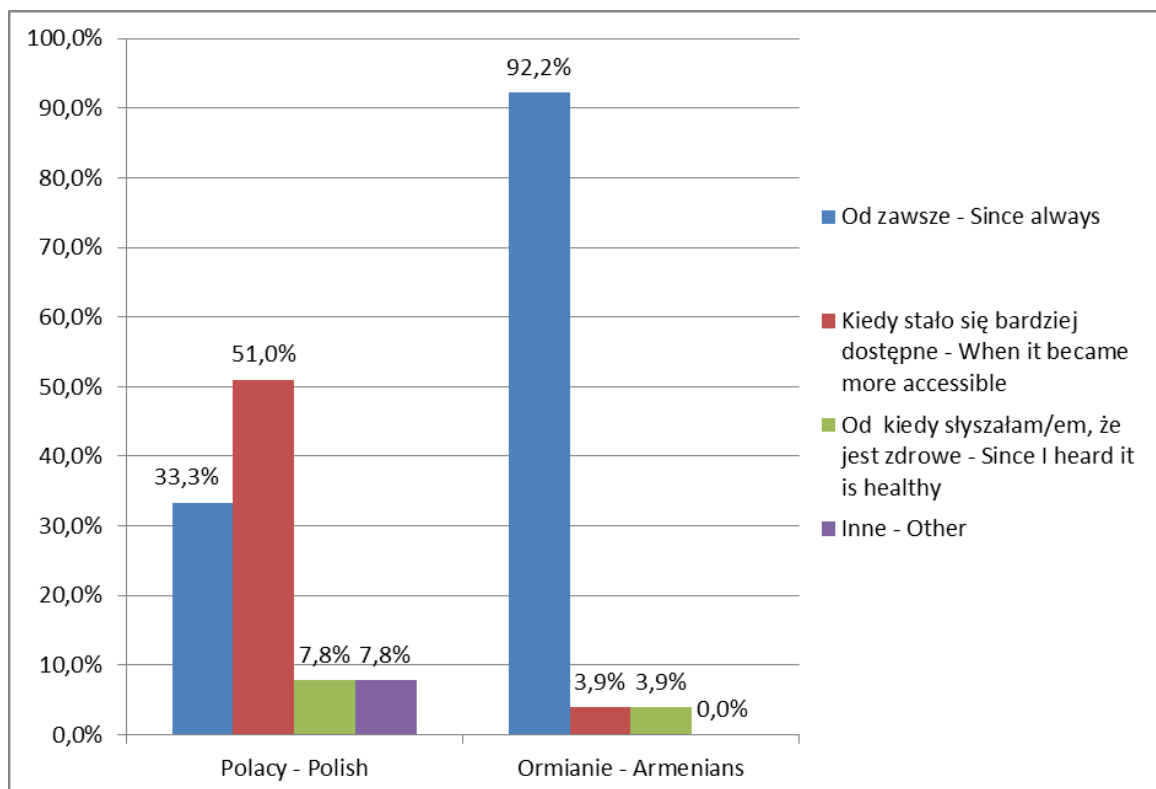


Figure 4. How long have you eaten sheep meat?

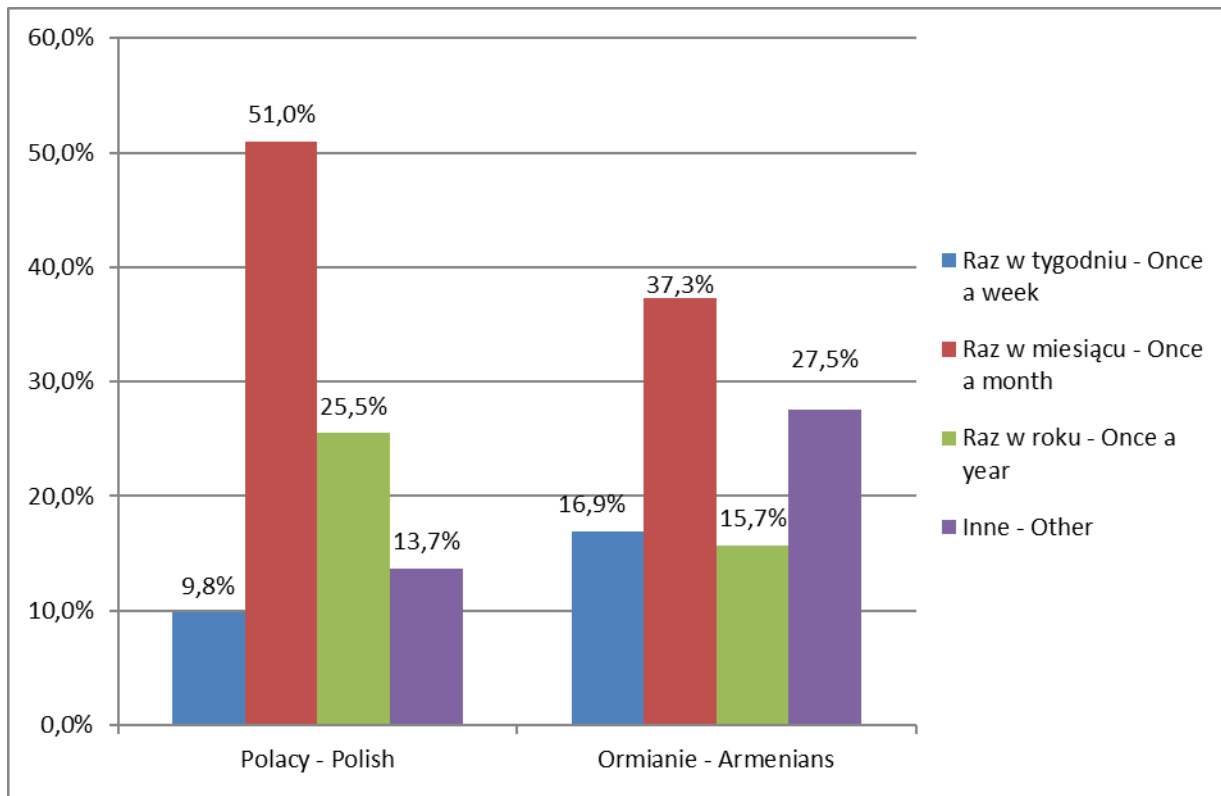


Figure 5. Frequency of eating lamb or mutton

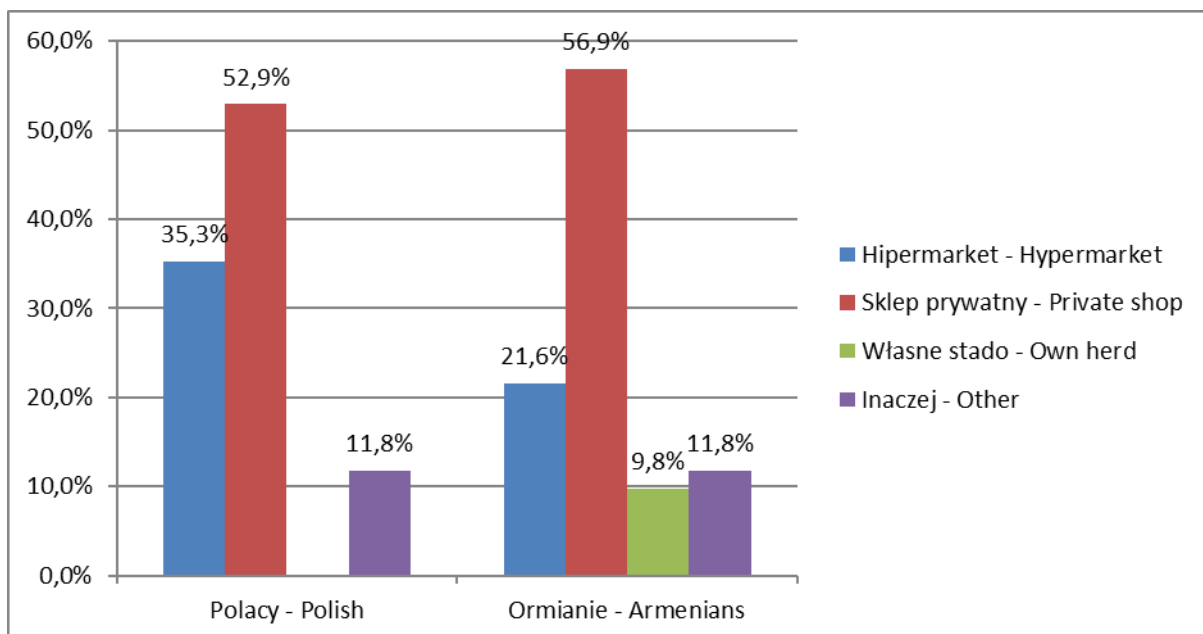


Figure 6. Forms of supply of sheep meat, depending on nationality

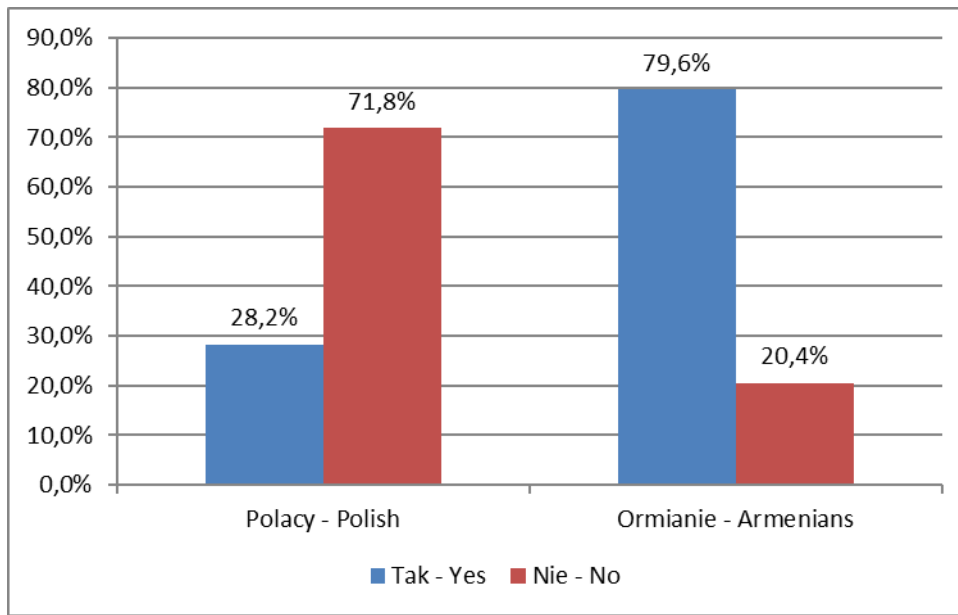


Figure 7. Have you heard about the health value of sheep meat?

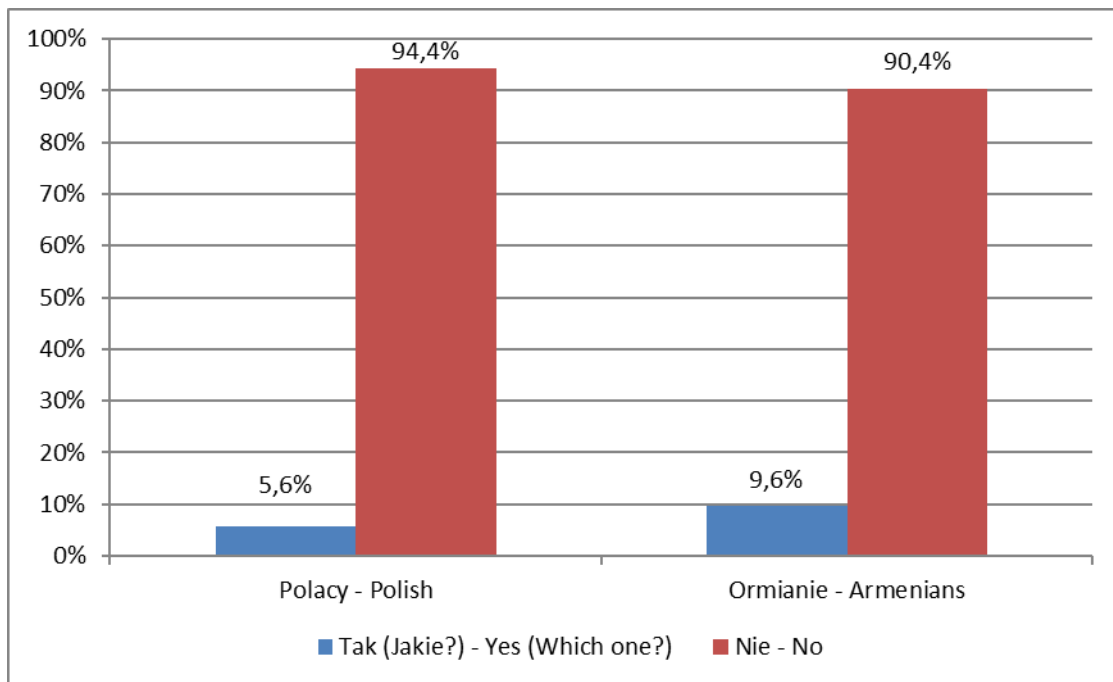


Figure 8. Knowledge of bioactive components present in the sheep meat

Both surveyed Poles and Armenians thought that sheep meat needed proper processing while preparing meals (about 83% from each group). Polish respondents mentioned grilling and baking as the most common methods of preparing it. The respondents of Armenian origin also indicated primarily grilling as a form of culinary treatment but also mentioned cooking. This way of preparing meat by the Armenians may be related to the fact that the most popular dish of lamb and mutton in Armenia is "Hashlama", which is prepared by cooking less valuable parts (breastbone, flank steak and shins) with

vegetables. Grilling - both by consumers of Polish and Armenian origin - was most often applied to valuable elements of the carcass: leg, neck and entrecote.

The research shows that both surveyed Poles and Armenians purchased sheep meat most often in private shops. As a second form of supply, the respondents of both nationalities mentioned the hypermarkets, respectively about 35% and 22% (fig. 6). In the "other" answers the restaurant or own meat processing plant were most often quoted. In the Armenian national group, the respondents also indicated the purchase directly from the producer as a form of obtaining sheep meat, which was not found in the responses of the Poles. Similar sources were indicated by consumers as a place for purchasing meat or honey in research conducted by Batorska et al. (2016), Pomianowski et al. (2015) and Gontarz et al. (2016).

### ***The awareness of the health benefits of sheep meat***

The majority of the surveyed respondents, both in the groups of Poles and Armenians, highly assessed the quality of sheep meat (76.9% vs. 88.2%) as compared to other types of meat. However, a significant number of respondents could not justify their responses. Only some have pointed out that sheep are animals that feed mainly on grass and that they are not grown intensely, as opposed to poultry, which, in their opinion, may ensure high quality and better nutritional value of meat. This theory was confirmed by the respondents regardless of their nationality. The awareness of the respondents regarding the health values of sheep meat was not fully satisfactory. Armenians have much more knowledge about the quality and nutritional value of this meat as compared to Poles (79.6% vs. 28.2%) (fig. 7). The respondents of both nationalities have little knowledge about the presence of bioactive compounds in sheep meat, preferably affecting human health (Figure 8). Among people declaring such knowledge, only one respondent from the Armenian group replied that the bioactive components present in lamb or mutton are CLA, unsaturated acids and linoleic acid. Polish respondents, along with linoleic acid, also mentioned polyunsaturated fatty acids and iron. Lamb, as a source of essential fatty acids and, thus, the association of this meat with the impact on human health was also indicated by the respondents in research conducted by Cunha de Andrade et al. (2016).

The results collected in the survey indicate that consumers do not have specific knowledge about the nutritional and health benefits of sheep meat. Such a condition may be related to the lack of advertising lamb meat as containing valuable bioactive components with recognised nutritional and dietary properties. Similar observations regarding the awareness of the properties of honey and their role in the diet were noted by Giemza (2004) and Gontarz et al. (2016).

### **Summary and conclusions**

The results of the survey carried among Polish and Armenian consumers indicate that the low interest in sheep meat in Poland may result from the lack of tradition of consumption and the young age of respondents of Polish origin, which is associated with lower awareness of the possibility of including lamb or mutton meat into their diets. The consumers of Armenian origin much more often ate sheep meat because of their better knowledge of its taste and tradition of consumption. The reason for the low consumption of this type of meat can be the difficulties in its availability and high price. It was shown that in spite of the declared high quality and evaluation of sheep meat, there is no specific knowledge of its health benefits. The vast majority of the respondents had no awareness of the presence of bioactive components in sheep meat and, thus, could not determine them and justify their actions. Proper advertising and consumer awareness of the value and pro-health properties of sheep meat could undoubtedly contribute to increasing its production and consumption.



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## THE USE OF SHEEP MEAT IN THE DIET OF CONSUMERS OF POLISH AND ARMENIAN ORIGIN

### Summary

The aim of this study was to analyse the use of sheep meat in the diet of Polish consumers and Armenians living in our country. The research was conducted in the form of a questionnaire consisting of 21 single and multiple choice questions. In total, 161 people took part in the survey, including 104 people of Polish descent and 57 people of Armenian origin. The results of the research have shown that Armenians are more likely and more often eat sheep meat. Less interest in lamb and mutton among Polish respondents results from the lack of tradition of its consumption in our country. The surveyed pointed to the high quality, delicacy and palatability of this kind of meat, but also paid attention to its high price and low availability. There was a lack of sufficient knowledge of respondents regarding the health benefits of sheep meat. Appropriate advertising and consumer awareness of the value and health-promoting properties of sheep meat could contribute to an increase in its production and consumption.

**Key words:** sheep meat, consumers, preferences, consumption