

## **ANALYTICAL ANALYSIS OF TRADITIONAL FOODS: FILLING THE GAP IN SERBIAN FOOD COMPOSITION DATABASE INFORMATION\***

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**ABSTRACT:** Addition of the analytical parameters to traditional food is an ongoing requirement for development and updating of food composition database (FCDB). The list of commonly consumed Serbian traditional foods was identified: gibanica (filo pastry with cheese fill), prebranac (first cooked, than baked beans), ajvar (cooked pepper and aubergine spread), fresh cheese, kajmak (creamy dairy product), and vanilice (cookies). The aims of our study were: 1) to obtain analytical values of representative traditional foods following EuroFIR criteria, 2) to fulfill the gap in traditional food composition knowledge and 3) to get high quality analytical data for inclusion in FCDB.

**Key words:** *traditional food, Serbian Food Composition Database (FCDB)*

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### **INTRODUCTION**

Traditional foods have played a major role in traditions of different cultures and regions for thousands of years. They include foods that have been consumed locally and regionally for an extended time period. Preparation methods of traditional foods are part of the folklore of a country or a region. Unfortunately, throughout Europe, some traditional foods are at risk of disappearing due to altered lifestyles. Therefore, it is important to study and document traditional foods to preserve one of the important elements of European cultures.

Most people can probably name at least one traditional food of the region they come from. Searching the internet for 'traditional foods' shows that numerous collections of traditional food recipes are available from countries worldwide. However, defining traditional foods is not as easy as it might be presumed. There are

very few definitions available, and most of them have been developed relatively recently. One of these definitions has been prepared by EuroFIR. Traditional food is a food with a specific feature or features, which distinguish it clearly from other similar products of the same category in terms of the use of 'traditional ingredients' (raw materials of primary products) or 'traditional composition' or 'traditional type of production and/or processing method' as defined below (Costa, 2005).

Over time, traditional foods have been influenced by many factors. One of these factors is the availability of raw materials; traditional food is thus influenced by agricultural habits and location. Regions at a lower altitude, for example, have different vegetation compared to regions at high altitudes; countries without access to the sea usually have a lower availability of fish

and seafood compared to those with a large coastal area (Davis, 2005).

Traditional foods and dishes have also been influenced by religious habits and beliefs. Certain culinary rules have always been a part of different religions. In Europe, where Christians, Muslims and Jewish people have lived next to each other for centuries, each religion has defined itself in terms of diet and food taboos (Parasecoli, 2005).

## MATERIAL AND METHODS

Fresh cheese, kajmak and ajvar were bought in three different stores and 100 g of each were pooled and 200 g was taken for further analysis. Gibanica, vanilice and prebranac were homemade using the most common recipes.

Nutritional analysis was carried out by two accredited laboratories and included determination of water, ash, protein, fat, vitamin A, vitamin E and minerals (zinc, copper, manganese, iron). The samples were collected, prepared and distributed to the laboratories according to instructions given by EuroFIR Traditional food work package. Proximate composition in analyzed samples included the determination of moisture (M), ash (A), crude proteins (CP) and crude fat (CF). Total carbohydrates (TCH) content, crude "by difference", was calculated by the following formula:

$$TCH(\%) = 100\% - \%(CP + A + CF + M)$$

Moisture was determined by the official gravimetric AOAC method (AOAC 925.40). Samples were dried to constant

weight in an air oven at  $(105 \pm 5) ^\circ\text{C}$  and weight loss on drying was expressed as moisture content (%). Ash content was determined by direct gravimetric method (AOAC 923.03) that includes ashing of the samples in an oven at  $550 ^\circ\text{C}$  until constant weight was attained. Crude proteins (CP) content was estimated based on total nitrogen content of samples determined by Kjeldahl method (AOAC 955.04D), using applicable converting factor, ranging from 5,7-6,25 based on total nitrogen content of the proteins in major compound of selected composite food. Crude fat content was determined gravimetrically following Soxhlet extraction, with ether according to the official AOAC method (AOAC 963.15). Energy values of selected composite food were calculated based on determined content by the following formula:

$$\text{Energy value (estimated, kJ/100g)} = [4 \times \text{protein}(\%)] + [4 \times \text{carbohydrate}(\%)] + [9 \times \text{fat}(\%)]$$

Vitamin A and vitamin E were determined by HPLC. Minerals were determined by graphite furnace atomic absorption spectrometric technique (GFAAS), reference document, EPA 200.9 (1994).

## RESULTS AND DISCUSSION

Analytical determination (Table 1) of traditional foods gives us, among other data, general information which food has high % of fat (kajmak) or which has high percentage of vitamin E (fresh cheese). Microelements content could provide an information valuable for nutritional data.

**Table 1.**  
Nutritional features of selected traditional foods

	Fresh cheese	Kajmak	Ajvar	Gibanica	Prebranac	Vanilice
Moisture (%)	70.96	35.82	79.74	51.39	67.24	13.29
Ash (%)	3.54	1.81	2.48	2.25	1.86	0.51
Proteins (%)	16.20	3.35	1.85	11.28	5.77	7.16
Fat (%)	2.86	60.53	2.80	10.77	1.70	25.05
Vitamin A (mg/kg)	70.00	120	/	/	/	54.00
Vitamin E (mg/kg)	230	/	/	/	/	/
Zn (mg/kg)	12.32	2.55	3.44	8.56	7.76	4.46
Cu (mg/kg)	0.28	0.19	0.96	0.65	1.81	0.69
Mn (mg/kg)	0.20	0.06	1.42	1.53	3.60	3.54
Fe (mg/kg)	1.16	0.38	5.40	8.46	14.16	8.52

**Table 2.**

Consumer perception of traditional food products in Belgium(BE), France (FR), Italy (IT), Norway (NO), Poland (PL) and Spain (ES) expressed as mean association on a scale of 1-7 (1 = don't agree, 7 = totally agree). Source: Vanhonacker et al. (2008)

	BE	FR	IT	NO	PL	ES	SRB
When think about traditional food, I think about food products that parents and <b>grandparents already ate</b>	5.84	5.75	5.67	6.10	6.14	6.05	<b>5.75</b>
I consider traditional food as <b>well-known</b> food	5.58	5.46	5.59	5.79	5.74	5.84	<b>4.63</b>
The availability of traditional food is strongly <b>dependent on the season</b>	5.49	5.90	5.68	5.11	5.19	5.65	<b>5.25</b>
According to me, traditional food is typically something one <b>can eat very often</b>	5.37	5.53	5.18	4.98	4.79	5.45	<b>5.50</b>
Traditional food has an <b>authentic recipe</b>	5.07	5.49	5.78	5.26	5.84	5.80	<b>5.75</b>
To me, a traditional food product is associated with <b>specific sensory properties</b>	4.93	5.57	5.71	5.17	5.95	5.73	<b>4.50</b>
Traditional food has an <b>authentic origin of raw material</b>	4.80	5.36	5.44	5.24	5.61	5.39	<b>5.25</b>
A traditional food product is typically produced 'in <b>grandmother's way</b> '	4.70	5.39	5.36	5.17	5.87	5.55	<b>6.34</b>
Traditional food has an <b>authentic production process</b>	4.65	5.04	5.39	4.98	5.39	5.21	<b>6.00</b>
The key steps of the production of traditional food must be done <b>locally</b>	4.45	5.05	5.20	4.10	4.90	5.31	<b>5.13</b>
When it comes to food products, for me traditional food means <b>natural, low processed</b>	4.40	4.82	4.41	4.24	4.84	5.17	<b>3.63</b>
A traditional food product must <b>contain a story</b>	3.90	4.68	5.51	4.53	6.16	5.37	<b>5.25</b>
When I think about traditional food, I think about <b>special occasions</b> and/or celebrations	3.89	4.71	4.86	5.07	5.30	4.38	<b>5.13</b>

Analyzing consumer perception (Table 2) of traditional food products it could be concluded that answers of Serbian citizens were slightly different from the answers of the people from other countries. In Serbia, traditional food is connected with special occasions more than in other countries. Also, Serbian people do not think that traditional food is natural, low processed comparing to others. More than others, Serbian people is aware that traditional food has authentic production process as well as that it is produced in "grandmother's way", but less than other, associate traditional food with specific sensory properties. They actually do not consider traditional food as "well known" as much as other does.

Comparing the answers and analyzing consumer perception, citizens from Europe and Serbia have more or less similar opinion and they agree that traditional food is: a) eaten by grandparents, b) season dependent, c) eaten very often, d) prepa-

red using the authentic recipe, and e) made by raw material that has the authentic origin. Answers are mostly similar considering the fact that traditional food contains a story and that key steps of food preparation have to be done locally. Although there are some differences from country to country we can conclude that traditional food is generally well understood. Even though there is a need to improve the people's knowledge and perception of traditional food through theoretical and practical courses, workshops, and free open exhibitions.

## CONCLUSION

According to Trichopoulou et al. (2007), dietary patterns are influenced by the local availability of foods and the cultural and socioeconomic environment, but there is a trend for transfer and assimilation of new habits between countries. In the 1960s the diet of Mediterranean populations was characterized by a high consumption of

fruits and vegetables, contrary to the low consumption of these foods in Northern European countries. These large differences seem to be diminishing and contemporary patterns reveal Mediterranean populations straying from their traditional dietary choices, whereas in Northern European countries Mediterranean-style eating has increased in popularity (Trichopoulou et al., 2006). Because of the increasing globalization and internationalization of the food market, many traditional foods are at risk of disappearing. The documentation of traditional foods and dishes is essential for sustaining traditional foods, which are an important part of cultural heritage.

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## АНАЛИТИЧКА АНАЛИЗА ТРАДИЦИОНАЛНЕ СРПСКЕ ХРАНЕ: ДОПУНА ПОДАТАКА СРПСКЕ FCDB БАЗЕ ПОДАТАКА

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**Сажетак:** Унапређењу српске FCDB базе података доприносе и подаци које смо аналитички обрадили и унели у базу а односе се на састав макро и микроелемената у традиционалној храни која је код нас у Србији препозната. У нашу српску традиционалну храну убројали смо: гибаницу, пребранац, ајвар, кајмак и ванилице. Циљеви наше студије која је само један део ЕуроФир пројекта (FP6) били су: а) да пратећи све критеријуме ЕуроFIR–а одредимо аналитичке вредности репрезентативне традиционалне хране б) да употпунимо празнине наше FCDB базе и ц) употпунимо знање везано за традиционалну храну уопште.

**Кључне речи:** традиционална храна, српска FCDB база података

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