

'OBWARZANEK KRAKOWSKI' AS A TRADITIONAL FOOD

Dorota Gałkowska, Joanna Sobolewska-Zielińska

ABSTRACT

The aim of this work was to evaluate the quality and to compare the traditional ('obwarzanek krakowski') with the non-traditional ('obwarzanek') bakery products. Four samples were analysed for chemical composition and texture and colour of crumb. The analysed products differed in the features of general appearance and chemical composition. The traditional products became much more hard during storage time than the non-traditional ones.

Keywords: 'obwarzanek krakowski', traditional food, composition

INTRODUCTION

Traditional and regional products are strong symbols of a given region. Regional products are goods produced only in some regions of the European Union, and their name and production technology are protected by law. Traditional products owe their exceptionality to traditional manufacturing method considered as that which has been used for at list 25 years. Law regulations connected with production and protection of the traditional foods are in Council Regulation (EC) No 509/2006 of 20 March 2006 on agricultural products and foodstuffs as traditional specialities guaranteed and Council Regulation (EC) No 510/2006 of 20 March 2006 on the protection of geographical indications and designation of origin for agricultural products and foodstuffs. In Poland legal controls are contained in Law on registration and protection of names and signs of agricultural products and food products, as well as traditional products. In order to individualize these products the following measures are applied to them: Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG). In Poland traditional products, in number of about 937, are registered on the List of Traditional Products established by the Ministry of Agriculture and Rural Development. A registration at that List does not protect products, but only informs that some special requirements have been fulfilled. The European Union registered 34 such Polish products.

'Obwarzanek krakowski' (Kraków pretzel) is one of the traditional Polish products. It was registered on the List of Traditional Products at 28 November 2006 in the Category Bakery Products and Confectionery. In the European Union 'obwarzanek krakowski' was registered as PGI product at 30 October 2010. 'Obwarzanek krakowski' is one of the symbols of Kraków. It is a special bread product from yeast wheat dough, shaped by hand into the form of a ring twisted into a spiral, which is first boiled for a short time in water and then baked. Its crisp is browned and glossy, often sprinkled with poppy or sesame seeds or with salt. The first historical references to Krakow bakers, which granted them the right to sell their wares on the Kraków market square date back to 1257. At present

'obwarzanek krakowski' is produced by members of a guild, whose bakeries are located in the city of Krakow or in Kraków and Wieliczka districts. Unfortunately, apart from an original 'obwarzanek krakowski', which is marked by special mark, other products manufactured inconsistently with traditional recipe or beyond the area of original occurrence are sold under the name of 'obwarzanek' that is confusing for consumers.

The aim of this work was to evaluate the quality and to compare the traditional ('obwarzanek krakowski') with the non-traditional ('obwarzanek') bakery products.

MATERIAL AND METHODOLOGY

Four bakery products were bought at local bakeries or stands with products:

- A – 'obwarzanek krakowski' of producer no. 1,
- B – 'obwarzanek krakowski' of producer no. 2,
- C – 'obwarzanek' of producer no. 3,
- D – 'obwarzanek' of producer no. 4.

The samples were prepared for analyses by removing the crust from the pretzels. The crumb was analysed for water, titratable acidity, sodium chloride, ash, protein, fat, reducing sugars (PN-A-74108:1996) and total dietary fibre (AOAC Official Method 991.43). The energy value of the crumb was also determined by Atwater method (Codex Alimentarius, 2001). Moreover, the texture profile analysis (EZ Test Texture Analyzer, Shimadzu, Japan) and colour measurement in the CIE Lab system (Color i5 spectrophotometer, X-Rite, USA) of the crumb were also performed during three-day storage of the products.

RESULTS AND DISCUSSION

'Obwarzanek krakowski', as product that received PGI status, has to meet specific requirements for appearance and dimensions that are summarized in Table 1.

From the data in Table 1 it is evident that the C product differed from the other products and did not meet the requirements for 'obwarzanek krakowski' in respect of its dimensions. The appearance of the D product was similar to that of the traditional products, however, its weight was too high.

Table 1 Comparison of the analysed products in respect of the features of ‘obwarzanek krakowski’ specified in the Official Journal of the European Union (EC 2010/C 38/08)

Feature	Description	Product			
		A	B	C	D
shape	ring-shaped, in the form of an oval with a hole in the middle or, less frequently, a regular circle; surface formed by strands of dough twisted into a spiral; the strand having a round or oval cross-section	+	+	less characteristic ring-shape	+
colour	ranging from light golden through dark golden to light brown, with a distinct sheen	+	+	+	+
dimensions	diameter 12-17 cm thickness of strand 2-4 cm weight 80-120 g	+	+	higher values of the parameters	in some sites excessive thickness of strand; excessive weight
decoration	sprinkled with various ingredients, including: salt, sesame seed, poppy seed, nigella seed, mixed herbs or mixed spices (paprika, caraway, pepper), cheese or onion; also other ingredients	+	+	+	+

+ consistent with the description

Chemical composition and energy value of the products' crust is presented in Table 2. According to the Polish Standard (PN-A-74105:1992) water content of ‘obwarzanek’ should not exceed 44%. In our study water content of products ranged from 32.1 to 34.4%. Values of titratable acidity of the products A – D were lower than 3 and therefore met the requirements of the above-mentioned Polish Standard. Reducing sugar content for low-sweetened bakery products ranges from 4 to 15% (d.b.) (PN-A-74111:1998). The traditional products (A and B) contained more reducing carbohydrates than products C and D. It is in accordance with the description of ‘obwarzanek krakowski’ in the Official Journal of the European Union (EC 2010/C 38/08) that the crisp and the crumb of ‘obwarzanek krakowski’ have a slightly sweetish taste, typical of bakery products that are first parboiled and then baked. In the literature, there is lack of information concerning ash, sodium chloride, protein and dietary fibre contents and energy value of ‘obwarzanek’. This has been also emphasized by other authors reporting on various traditional Polish products (Przygoda et al., 2009). In our study the energy value of the products A – D was calculated on the basis of their chemical composition (PN-A-79011-6:1998). The two traditional products A and B) differed significantly from each other in most of the determined chemical parameters (Table 2). The same was observed for the non-traditional products (C and D). Traditional products (‘obwarzanek krakowski’) were characterized by higher fat and reducing sugars contents

than the other products. In the case of ‘obwarzanek’ D the lowest value of titratable acidity was found. Moreover, that product had the least sodium chloride and total dietary fibre contents and the highest fat content and energy value.

Results of texture measurements of the crumb are presented in Fig. 1. It was found that on the first day of measurement hardness of the fresh traditional products (A and B) was lower than that of non-traditional ones (C and D) (Fig. 1a). Value of elasticity of product B was the highest of all the products, which did not differ significantly in respect of that parameter (Fig. 1b). The non-traditional products (C and D) were characterized by lower values of cohesiveness than product B, while no significant differences in that parameter were found between products A and D (Fig. 1c). All the four analysed products did not differ in the values of mastication measured on the day of baking (Fig. 1d). According to specification document for ‘obwarzanek krakowski’ it should have a unique crumb structure and consistency. The differences in some of the textural parameters observed in our study between ‘obwarzanek krakowski’ and ‘obwarzanek’ can result from the specificity of their production, especially the preparation of the yeast dough and parboiling.

The feature that distinguishes ‘obwarzanek krakowski’ from other bakery products is that it remains fresh for a short period of just several hours. Hardness of the crumb can be used as indicator of staling (Fiszman et al., 2005). Values of that parameter increased with storage time for

Table 2 Chemical composition and energy value of ‘obwarzanek’ products

Kind of product	Water [%]	Titrateable acidity [°]	Sodium chloride [%, d.b.]	Ash [%, d.b.]	Protein [%, d.b.]	Fat [%, d.b.]	Reducing carbohydrates [%, d.b.]	Total dietary fibre [%, d.b.]	Energy value [kcal/100 g]
A	34.4 ^a	1.7 ^a	3.3	1.06 ^a	12.0	2.9 ^a	8.9	4.1 ^a	208
B	32.4 ^b	1.3	2.7	0.90 ^b	11.0 ^a	3.1 ^a	9.7	4.2 ^a	222
C	35.8 ^a	1.5 ^a	3.5	1.11 ^a	11.4 ^b	2.5	6.7	4.1 ^a	203
D	32.1 ^b	1.0	2.8	0.87 ^b	11.2 ^{ab}	3.6	7.5	3.5	227

Means with the same letters in the columns do not differ significantly at $\alpha = 0.05$.

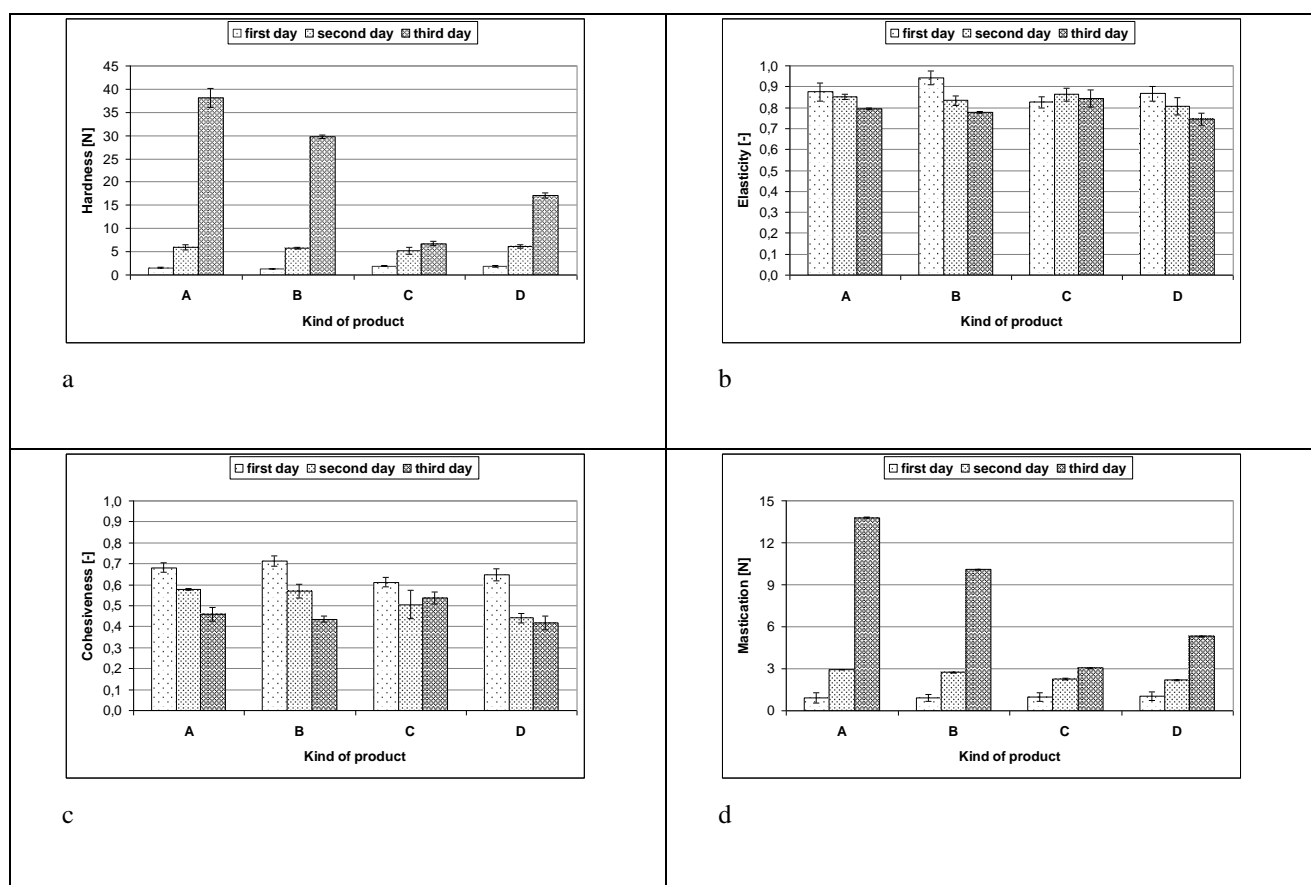


Figure 1 Texture parameters of the crumb: hardness (a), elasticity (b), cohesiveness (c), mastication (d)

all the analysed products (Fig. 1a). It was observed that the traditional products underwent staling much more than the non-traditional ones. The changes in crumb hardness values were accompanied by decreasing values of cohesiveness (Fig. 1c) and elasticity (Fig. 1b), apart from

product C in which values of the latter parameter remained constant. As a result of a significant increase in crumb hardness values, especially on third day of measurement, values of mastication also increased with storage time of the products (Fig. 1d).

Results of colour measurement revealed that products A and C did not differ significantly from each other in the value of lightness (L^*) measured on the day of baking and were darker than products B and D. The positive values of parameter a^* (ranged from 0.56 ± 0.04 to 1.87 ± 0.09) and parameter b^* (ranged from 18.64 ± 0.45 to 20.98 ± 0.72) indicated that the colour of the crumb included red and yellow components, respectively. The crumb lightness values decreased on third or second day of storage for traditional and non-traditional products, respectively. In products A and B values of parameter a^* increased during storage time, while in most cases no changes in values of parameter b^* of the analysed products were observed.

CONCLUSION

The analyzed products differed from each other in the features of general appearance. The dimensions of products C and D deviated significantly from these specified in the registration document for 'obwarzanek krakowski'. Both the traditional, and non-traditional products were diversified in the chemical composition. During storage time the values of crumb hardness of 'obwarzanek krakowski' increased much more than these of 'obwarzanek' and on the third day of measurement they were over twenty times greater than on the day of baking.

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Contact address:

Dorota Gałkowska, PhD., University of Agriculture in Kraków, Faculty of Food Technology, Department of Analysis and Evaluation of Food Quality, Balicka 122, 30-149 Kraków, Poland, E-mail: d.galkowska@ur.krakow.pl
Joanna Sobolewska-Zielińska, PhD., University of Agriculture in Kraków, Faculty of Food Technology, Department of Analysis and Evaluation of Food Quality, Balicka 122, 30-149 Kraków, Poland, E-mail: rrsobole@cyf-kr.edu.pl