

BUCKWHEAT-ENRICHED WHEAT BREAD – NATIONAL MARKET PLACEMENT POSSIBILITIES

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ABSTRACT: Quality parameters and the possibility of successful placement of buckwheat-enriched wheat bread on the national market are presented in this paper. Analysis of the market position of buckwheat-enriched wheat bread includes demands, offer and competition. Elements that affect the overall retail price of buckwheat-enriched wheat bread are given in details, along with SWOT analysis and marketing plan including target market, market supply and product marketing mix. According to all performed analyses it could be concluded that this product should be positioned on the national market, especially for people with special needs and requirements.

Key words: *bread, wholegrain buckwheat flour, marketing plan*

INTRODUCTION

Bread is the most frequently consumed bakery product in many countries and it is mainly produced using wheat flour, with daily intake reaching even 300 g per capita. Since bread is mostly produced using wheat flour, its nutritional and functional improvements can be the basis for upgrading the health status of the population with the preference to new special types of bread.

The possibility for improving the functional profile of white wheat bread is the use of nutritionally and functionally rich ingredients. These ingredients are, for example, pseudo-cereal flours (Alvarez-Jubete et al., 2009; Alvarez-Jubete et al., 2010) among which buckwheat flour dominates (Sakač et al.,

2012; Sedej, 2011; Sedej et al., 2010; Sedej et al., 2011).

Although white buckwheat flour is more frequently used compared to wholegrain buckwheat flour, the latter represents a better source of dietary fibers, polyphenols and tocopherols (Lin et al., 2009; Sedej et al., 2010). The production of wholegrain buckwheat flour is favored by the fact that it results in minimal amounts of milling by-products, and, therefore, it contributes to better utilization of milling raw material.

Having in mind the above-mentioned facts, as well as the lack of statistically significant differences in rheological parameters of the dough containing 10-50% of white or whole-

grain buckwheat flour instead of white wheat flour (Sedej et al., 2011), Stokić et al. (2015) formulated and characterized a special type of bread made by a modification of the standard white bread formulation containing wheat flour T-500 in which 50% of wheat flour was substituted by wholegrain buckwheat flour (buckwheat-enriched wheat bread).

Functionality of buckwheat-enriched wheat bread was achieved by the presence of dietary fibers and polyphenols originating from wholegrain buckwheat flour (Alvarez-Jubete et al., 2009; Sedej et al., 2011; Zieliński et al., 2009). Rutin and quercetin represent the dominant flavonoids in buckwheat flour (Kreft et al., 1999; Park et al., 2000), which significantly contribute to the functionality of buckwheat-enriched wheat bread. They were not detected in white wheat bread made from wheat flour T-500 because of their absence in white flour (Adom and Liu, 2002). The presence of these flavonoids in buckwheat-enriched wheat bread resulted in its significantly increased antioxidant capacity determined measuring the scavenging activity on DPPH radicals compared with white wheat bread. The increase in antioxi-

dant capacity of buckwheat-enriched wheat bread as a result of the presence of flavonoids was also observed by other researchers (Lin et al., 2009; Vogrinčić et al., 2010).

Although the possibility of successful placement of buckwheat-enriched wheat bread on the market can be primarily related to its functional and health benefits (Stokić et al., 2015), as well as exceptional sensory profile, which gave additional advantage in terms of sensory acceptability compared with white wheat bread (Jambreč et al., 2014), it was necessary to assess its market position by developing marketing and production plans, which were recognized and defined as a topic of the current paper.

MATERIAL AND METHODS

Material

Two types of bread (white wheat bread and buckwheat-enriched wheat bread) with the nutritional and functional properties presented in Table 1 (Stokić et al., 2015) were used to analyze the position of buckwheat-enriched wheat bread on the national market.

Table 1.

Quality parameters of white wheat bread and buckwheat-enriched wheat bread (Stokić et al., 2015)

Quality parameter	Buckwheat-enriched wheat bread	
	White wheat bread	Buckwheat-enriched wheat bread
Moisture (%)	33.6 ± 0.01 ^a	34.6 ± 0.04 ^b
Crumb moisture (%)	35.9 ± 0.03 ^a	40.8 ± 0.02 ^b
Mineral matters (%. d.m.)	1.93 ± 0.02 ^a	3.34 ± 0.05 ^b
Crude protein (%. d.m.)	13.7 ± 0.11 ^a	14.0 ± 0.09 ^b
Fat (%. d.m.)	2.92 ± 0.03 ^a	3.32 ± 0.05 ^b
Starch (%. d.m.)	73.4 ± 0.18 ^b	66.2 ± 0.04 ^a
Reducing sugars (%. d.m.)	4.77 ± 0.08 ^b	1.36 ± 0.03 ^a
Acidity	1.54 ± 0.01 ^a	1.65 ± 0.01 ^b
Total dietary fibre (%. d.m.)	2.59 ± 0.07 ^a	5.76 ± 0.06 ^b
Total phenolic content (mg GAE/100 g d.m.)	33.3 ± 2.86 ^a	143 ± 7.68 ^b
Rutin (mg/100 g d.m.)	n.d.	6.31 ± 0.24
Quercetin (mg/100 g d.m.)	n.d.	1.32 ± 0.18
DPPH radical scavenging activity, IC ₅₀ (mg/mL)	25.2 ± 0.172 ^b	3.23 ± 0.10 ^a

Values are means of three determinations ± standard deviation (n = 3).

Values in the same column with the same superscript are not statistically different (p<0.05).

GAE – gallic acid equivalent

d.m. – dry matter

Methods

Analysis of the market position of buckwheat-enriched wheat bread was performed by defining demands, offer and competition.

Overall retail price of buckwheat-enriched wheat bread was calculated using the prices of all ingredients for its production, which were taken for the time period of 2013, as well as other costs concerning its production, packaging, gross profits, taxes, transportation, accumulation and margin.

SWOT analysis was done according to Houben et al. (1999) and Hill and Westbrook (1997) while marketing plan was prepared according to Vasiljev (2010) and Chernev (2014).

RESULTS AND DISCUSSION

Analysis of the market position of buckwheat-enriched wheat bread

Demand

Annual consumption of bread in Serbia is about 109 kg per capita, which is considerably higher than the consumption of the European consumers (30-40 kg per capita) (Živković et al., 2007). Regarding the high prevalence of cereal-based products, especially bread (300 grams per day per capita) in our diet, it can be considered as one of the main sources of nutrients.

Cardiovascular disease, often caused by disorders of lipid metabolism, is the most frequent disease among Serbian population, with prevalence of about 20-28% (Petrović-Oggiano et al., 2010). It is estimated that this part of population annually consumes around 190.000 t of bread.

Concerning the proven anti-atherogenic effect of buckwheat-enriched wheat bread (Stokić et al., 2015), this product can be beneficial for consumers with the aforementioned disorders of lipid metabolism. Based on the available data, and also taking into account the consumers who regularly use special types of bread, it is assumed that the annual production of buckwheat-en-

riched wheat bread in Serbia could reach a level of about 200.000 tones.

Offer

Buckwheat-enriched wheat bread belongs to the group of special types of bread, which represents 10-20% of the total production of bread in Serbia. Annual production of bread in Serbia is estimated at about 766.500 t, while annual production of special types of bread is about 75.000 to 150.000 t, with increasing tendency.

In bakeries, supermarket chains and mega-stores in Serbia there are 20 special types of bread, available in packed or unpacked form. Among the breads containing buckwheat flour, most of them are produced using white buckwheat flour at the level of 20%, which is significantly lower amount in comparison to bread analyzed in this study, which contains 50% of wholegrain buckwheat flour.

Competition

The advantage of buckwheat-enriched wheat bread results from the fact that it contains 50% of wholegrain buckwheat flour, which is higher amount than those contained in other bread formulations containing buckwheat flour available on the market. In addition, nutritional and functional properties of wholegrain buckwheat flour contribute to the overall quality of buckwheat-enriched wheat bread (Lin et al., 2009).

Buckwheat-enriched wheat bread is the result of research work of the multidisciplinary team. Therefore, this product is characterized not only in terms of nutritional value, but its positive effect on human health was also proven (Stokić et al., 2015), making this product better in comparison to the similar products available on the market.

Competitiveness of buckwheat-enriched wheat bread on the national market results from its calculated retail price of 71.76 RSD, since the prices of the existing similar products are in the range 60–160 RSD. Price of all ingredients used in the formulation of

buckwheat-enriched wheat bread are given in Table 2.

Buckwheat-enriched wheat bread is planned to be distributed in the form of 400 g loaves. Therefore, the values given in Table 3 provide the data necessary for calculation of the total cost of ingredients per one loaf, while all elements that affect the final retail price of buckwheat-enriched wheat bread are given in Table 4.

Total price of ingredients as well as overall retail price of white wheat bread are given in

Table 5 and Table 6, respectively. This bread is used in order to compare prices of new product – buckwheat-enriched wheat bread and the most commonly used commercially available product.

SWOT analysis

SWOT analysis of the buckwheat-enriched wheat bread establish the basic advantages and opportunities, as positive factors, and basic weaknesses and threats, as negative factors, are presented in Table 7.

Table 2.

Price of ingredients used for buckwheat-enriched wheat bread production

Ingredient	Price (RSD)*
Wholegrain buckwheat flour (hydrothermally treated)	254.30 per 1 kg
Wheat flour T-500	40.90 per 1 kg
Yeast	70.60 per 500 g
Salt	27.80 per 1 kg
Vegetable fat	255.00 per 1 kg
Wheat gluten	351.60 per 1 kg
Bread dough improver	450.00 per 1 kg
Water	0.084 per L

*The prices were taken for the time period of 2013.

Table 3.

Elements that affect the overall price of ingredients of buckwheat-enriched wheat bread

Ingredient	Ingredient proportion (%)	The amount of ingredient per loaf (g)	Ingredient price per loaf (RSD)
Wholegrain buckwheat flour (hydrothermally treated)	50.0	129.5	32.93
Wheat flour T-500	50.0	129.5	5.30
Yeast	3.0	7.77	1.10
Salt	2.0	5.18	0.14
Vegetable fat	2.0	5.18	1.32
Wheat gluten	2.0	5.18	1.82
Bread dough improver	0.4	1.04	0.47
Water	Up to optimal consistence	160.58	0.01
Total: 43.09 RSD			

Table 4.

Elements that affect the overall retail price of buckwheat-enriched wheat bread (per loaf)

Costs	Price (RSD)
Ingredients	43.09
Production costs	3.20
Packaging	6.75
Gross profits	6.25
Taxes	0.12
Transportation	2.50
Accumulation	0.85
Producer price	63.76
Margin	8.00
Retail price	71.76

Table 5.

Elements that affect the overall price of ingredients of white wheat bread

Ingredient	Ingredient proportion (%)	The amount of ingredient per loaf (g)	Ingredient price per loaf (RSD)
Wheat flour T-500	100.0	270.00	11.04
Yeast	3.0	8.10	1.14
Salt	2.0	5.40	0.15
Vegetable fat	2.0	5.40	1.38
Wheat gluten	2.0	5.40	1.90
Bread dough improver	0.4	1.08	0.49
Water	Up to optimal consistence	148.05	0.01
Total: 16.11 RSD			

Table 6.

Elements that affect the overall retail price of white wheat bread

Costs	Price (RSD)
Ingredients	16.11
Production costs	3.17
Gross profits	6.25
Taxes	0.12
Transportation costs	2.50
Accumulation	0.85
Producer price	29.00
Margin	4.40
Retail price	33.40

Table 7.

SWOT analysis of the buckwheat-enriched wheat bread

S – Strengths:	W – Weaknesses:
<ul style="list-style-type: none"> • There is a clear strategic vision for marketing and sales of buckwheat-enriched wheat bread. • The buckwheat-enriched wheat bread is characterized by higher nutritional and functional quality compared to similar types of bread available on the market. • The price of buckwheat-enriched wheat bread is competitive with the price of other special types of bread on the market. • The buckwheat-enriched wheat bread is produced using valuable ingredient (wholegrain buckwheat flour). • Evidence of the antihyperlipidemic effect was obtained in the dietetic intervention study with statin treated patients. • Consumers have rated the buckwheat-enriched wheat bread as a bread of choice when compared to white wheat bread. • The buckwheat-enriched wheat bread is packed in attractive packaging made from bio-materials derived from renewable sources. • There are producers with appropriate production facilities, capacity and storage space that could introduce buckwheat-enriched wheat bread in their production. 	<ul style="list-style-type: none"> • There is no legal framework for functional foods, which would enable the positioning of the buckwheat-enriched wheat bread compared to other special types of bread, for which there is no evidence of functionality. • Bakery chains, supermarkets and megastores which have appropriate production facilities may not recognize the potential of buckwheat-enriched wheat bread positioning.
O – Opportunities:	T – Threats:
<ul style="list-style-type: none"> • The market for functional food has been increasing. • Possible placement of the patent for the production of buckwheat-enriched wheat bread on the European market. • Production of the buckwheat-enriched wheat bread is classified as very economically attractive. • The emergence of new potential groups of consumers who eat "healthy food". 	<ul style="list-style-type: none"> • The weakened consumer purchasing power. • Continuing economic recession in 2015. • Consumers in some regions are skeptical about functional foods. • The increase in competitive pressure, given that the market of functional food is constantly increasing. • The risk of manufacturing adulterated substitutes.

Marketing plan

Marketing plan focuses on consumers and satisfaction of their needs and requirements regarding the placement of buckwheat-enriched wheat bread. In this regard, it is necessary to plan activities to acquire new consumers and retain consumers who already have a tendency towards consumption of special types of bread.

Target market

The target group of consumers of buckwheat-enriched wheat bread involves people with hyperlipidemia due to the proven facts about its beneficial effect on their health status. Furthermore, consumers who care about their healthy eating habits and like characteristic taste and flavor of buckwheat also belong to the target group of

consumers. Production and marketing of buckwheat-enriched wheat bread would take place in bakery chains, supermarkets and megastores, which possess appropriate production facilities.

Market size depends on the total consumer demands for functional foods, i.e. special types of bread. As functional food market increases in size, there is a possibility of placing the production of buckwheat-enriched wheat bread on the worldwide market.

Market supply

Wholegrain buckwheat flour is available on the national market. Purchasing of other ingredients for bread production is established practice of the producers. Packaging of the buckwheat-enriched wheat bread consists of paper and cellophane, which are available on the market at affordable prices.

Product marketing mix

Marketing mix is used to make important decisions that lead to the execution of a marketing plan. The marketing mix is a crucial business tool used in marketing and by marketers. It is crucial when determining a product or brand's offer, in order to meet consumer needs and requirements (Kotler and Armstrong, 1996; Vasiljev, 2010). The 4Ps make up a typical marketing mix - Product, Price, Place and Promotion.

The marketing mix of buckwheat-enriched wheat bread comprises the following:

- **Product:** Buckwheat-enriched wheat bread was created based on the needs of consumers with special dietary requirements, which had been obtained on the basis of market research. Buckwheat-enriched wheat bread has to be considered as a special type of bread, which offers valuable buckwheat-containing components in comparison to competitive breads. Consequently, its consumption can contribute to the consumers with hyperlipidemia to improve their health status. This bread is packed in attractive packaging made from bio-materials derived from renewable energy sources.

- **Price:** The customer's perception of value is an important determinant of the price charged. The danger of using low price as a marketing tool is that the customer may feel that quality is being compromised. It is important when deciding on price to be fully aware of the brand and its integrity. Estimated retail price of buckwheat-enriched wheat bread would be 71.76 RSD for a 400 g loaf (Table 4). It is very competitive price considering the prices of other special types of bread, which range from 60 to 160 RSD.
- **Place:** Place, as an element of the marketing mix, is not just about the physical location or distribution points for products. It encompasses the management of a range of processes involved in bringing products to the end consumer. Buckwheat-enriched wheat bread would be found in all the major supermarket chains, small shops, health food stores, various bakeries, etc., making this bread very accessible for the consumers.
- **Promotion:** The promotion aspect of the marketing mix covers all types of marketing communications. One of the methods employed is advertising, which is conducted on TV, radio, in cinema, online, using poster sites and press (for example in newspapers and magazines). The skill in marketing communications is to develop a campaign which uses several of these methods in a way that provides the most effective results. Since the buckwheat-enriched wheat bread is a special type of bread, which has a target group of consumers, it is necessary to stand out from the mass of similar products. This can be achieved by various sales promotion activities, which further stimulate the target consumers to purchase. Some of them are special ways of exhibiting and displaying bread, as well as giving free samples to test potential consumers, so that they will be able to assess the quality of the product.

Plan of production

Production of buckwheat-enriched wheat bread does not need any additional investment in the equipment, because existing equipment is adequate for its production. The only change in the technological process of buckwheat-enriched wheat bread production is an additional step, i.e. hydrothermal treatment of wholegrain buckwheat flour (Stokić et al., 2015).

The production capacity of buckwheat-enriched wheat bread depends on the existing capacity of the bakery which would bring this bread into its production program.

CONCLUSION

Based on the analysis of the market position of buckwheat-enriched wheat bread including demands, offer and competition, elements that affect its overall retail price, SWOT analysis and marketing plan with target market, market supply and product marketing mix, it could be concluded that this product should be positioned on the national market, especially for people with special needs and requirements. Production plan does not need to be changed concerning investments, while only one step needs to be added in the technological procedure.

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ХЛЕБ ОБОГАЋЕН ИНТЕГРАЛНИМ ХЕЉДИНИМ БРАШНОМ – МОГУЋНОСТ ПЛАСМАНА НА ДОМАЋЕ ТРЖИШТЕ

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Сажетак: У раду су приказани нутритивни и функционални показатељи квалитета хлеба обогаћеног интегралним хељдиним брашном (50% супституције пшеничног брашна Т-500 у формулацији за бели хлеб) и могућности његовог пласмана на домаће тржиште. Анализа тржишне позиције хлеба обогаћеног хељдиним брашном обухвата приказ тражње, понуде и конкуренције. Приказани су елементи који утичу на малопродајну цену испитиваног хлеба, заједно са SWOT анализом и маркетинг планом, који обрађује циљно тржиште, тржиште снабдевања и маркетинг микс. На основу наведених анализа, може се закључити да хлеб обогаћен интегралним хељдиним брашном може наћи своје место на домаћем тржишту, посебно када су у питању потрошачи са специјалним захтевима и потребама.

Кључне речи: хлеб, интегрално хељдино брашно, маркетинг план

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