

Sensory and quality characteristics of artisanal breads

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Background

Results of some scientific studies indicate that bread made with non-industrial yeast and technology, but with a slow-fermented (wild) sourdough process, is easier to digest and presumably has health benefits. Wild sourdough is nothing more than a fermented mixture of flour and water, in which the fermentation is caused by a “wild” microbial colony that can be considered to vary in its composition. Nowadays, we are increasingly confronted with the communication that artisan baked products made with wild sourdough can be well tolerated and consumed by gluten-sensitive people due to their long fermentation process. However, this claim has not been substantiated, so if people with celiac disease consume these products without any restrictions, they could face serious health consequences.



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Materials and Methods

In this study, laboratory and organoleptic examinations of 32 artisan/wild sourdough breads and 9 traditional (according to Codex Alimentarius Hungaricus) breads were performed. Both artisan and traditional technology products included gluten-free bread. The examination of the breads included the verification of compliance with the requirements of the relevant Codex Alimentarius Hungaricus (e.g. the presence of mandatory labelling elements) quality and sensory tests (1, 2, 3, 4). Protein content in breads was measured by Dumas method (WBSE-131:2018), while presence of gluten was checked by RIDASCREEN®Gliadin Sandwich ELISA Gliadin R7001 kit (LOQ: 5 mg/kg).

Results

Of the 32 artisanal products, 28 were marketed without individual packaging, 14 of which did not meet the Codex Alimentarius Hungaricus 1-3/16-1 specification for the weight of the product, and only one product had the obligatory unique bread label. The 4 individually packed artisanal breads are marketed as gluten-free. Due to their unique packaging, they complied with the labeling obligation. According to the Codex Alimentarius Hungaricus 2-109, the ingredients of the artisanal breads must be listed on the label. Given that wheat flour-based artisanal breads did not have the unique bread label, these products did not meet this requirement. According to the Codex Alimentarius Hungaricus 1-3/16-1, white and semi-brown breads must have an acidity of at least 3, this requirement is not met by artisanal and large-scale gluten free breads, while artisanal and large-scale wheat breads have an acidity level as 3 or more. pH of the breads was in accordance with the literature. The salt content of artisan breads was higher than the value prescribed in the Codex Alimentarius Hungaricus 1-3/16-1, and their organoleptic characteristics did not differ significantly from those produced with large-scale technology.

Technology	Basic material	n	Acidity	pH	Salt content (g/100 dry weight)	Sensory scores
Artisanal	wheat flour	28	6.7 ± 1.8	4.3 ± 0.2	3.4 ± 1.2	16.3 ± 1.7
	gluten free mixture	4	2.1 ± 0.7	6.1 ± 0.1	1.3 ± 0.5	15.5 ± 2.0
Large-scale	wheat flour	6	3.0 ± 1.0	5.4 ± 0.3	2.4 ± 0.7	16.2 ± 1.7
	gluten free mixture	3	1.0 ± 0.6	5.9 ± 0.5	1.3 ± 0.5	14.0 ± 0.5
Codex Alimentarius Hungaricus 1-3/16-1			3	-	1.3 – 2.35	-

The most important result is that the gluten content of artisanal sourdough breads cannot be determined because the amount of gluten present in these products is several times higher than the gluten-free limit required by the relevant legislation (20 mg/kg). The results confirmed that **promotion of artisan breads and bakery products as “gluten-free” or “can be consumed by gluten sensitive persons” is illegal and hazardous, consumption of these products by affected people can cause serious health problems for them.**

Technology	Basic m.	Protein, %	Gluten, mg/kg
Artisanal	wheat flour	8.77 ± 1.40	>100
	gluten free	3.37 ± 0.60	15.2 ± 2.93
Large scale	wheat flour	-	-
	gluten free	2.45 ± 0.49	7.35 ± 1.91