



UNIVERSITATEA DE ȘTIINȚE AGRICOLE ȘI
MEDICINĂ VETERINARĂ A BANATULUI
"REGELE MIHAI I AL ROMÂNIEI" DIN
TIMIȘOARA
FACULTATEA DE INGINERIE ALIMENTARĂ



**"CERCETĂRI PRIVIND VALORIFICAREA UNOR
SUBSTANȚE BIOLOGIC-ACTIVE ÎN VEDEREA
OBTINERII UNOR PRODUSE ALIMENTARE CU
APORT NUTRITIV RIDICAT"**

OBJECTIVE SPECIFICE

- Identificarea unor soluții tehnologice noi de dezvoltare a unor produse alimentare cu valoare nutrițională îmbunătățită;
- Obținerea unor prototipuri de produse alimentare cu valoare nutrițională îmbunătățită;
- Evaluarea gradului de acceptare de către consumatori a acestor produse alimentare cu valoare nutrițională îmbunătățită



REALIZĂRI / RECUNOAȘTERE



The International Symposium of Youth Researches 28 - 29 November 2019

Preliminary research on the proximate composition of blackberry fruits (*Rubus fruticosus*) Birtea A-I, Velciov A-B*, Popescu G-S*

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This study aims to determine the proximal composition of local blackberries variety (*Rubus fruticosus*), marketed in different agri-food markets in Timisoara (Romania) and highly appreciated due to its flavor and taste, but also for the outstanding nutritional and curative qualities. These fruits are consumed by the local population either as a fresh fruit or in the form of jams, syrups or pastry, etc. The high content of antioxidants, minerals, vitamins, carbohydrates (especially simple sugars) suggests that these fruits could be considered as functional foods. The blackberry fruits have been analyzed for their proximal composition: fruit weight, dry matter, total mineral content (ash), total soluble substances (TSS), and titrable acidity through recommended standard procedures. The preliminary results show that the analyzed fruits had weight (6.01 g - 7.23 g), dry matter (11.24 - 12.63%), total minerals (0.34 - 0.44%), total soluble solids (11.6-12.7°Brix), pH (3.1-3.5), total titrable acidity (0.9- 1.2 % citric acid) and TSS/TA Ratio (9.66 - 14.11).

Proximate composition of analyzed blackberries

Specificate	Weight, (g)	Dry matter (%)	Total minerals (ash), %
Provider 1	7.23±0.62	11.24±0.35	0.34±0.03
Provider 2	6.66±0.35	12.63±0.42	0.44±0.05
Provider 3	6.01±0.47	12.41±0.44	0.38±0.04



Physico-chemical characteristics of analyzed blackberries

Specificate	Total soluble solids (TSS), %	Total titratable acidity (TTA), % citric acid	pH	TSS/TTA
Provider 1	11.84±0.43	1.21±0.03	3.10±0.03	9.66±0.63
Provider 2	12.74±0.53	0.91±0.05	3.50±0.04	14.11±0.52
Provider 3	12.35±0.36	1.04±0.04	3.41±0.03	12.30±0.43



CONCLUSIONS

According to our findings, we can also conclude that the blackberry fruits were harvested in optimal ripening period. Finally, it can be concluded that the analyzed blackberries are favorably appreciated in terms of appearance, taste and aroma and are recommended for consumption either as such - in fresh form, or in various food preparations.



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Section - "Young researchers in food engineering"



NUTRITIONAL PROFILE EVALUATION OF THE GLUTEN-FREE BREAD OBTAINED FROM FLOUR MIXTURES WITH HIGH NUTRITIONAL VALUE

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At present, both nationally and internationally, the food market is experiencing a permanent improvement and diversification, taking into account the satisfaction of preferences, needs and not least the increasing demands of consumers. Bread is a staple food for a large part of the world's population. The possibilities of improving the quality of the bread assortments existing on the Romanian market through the nutritional intervention bring to the attention of the population, products with the addition of active biological compounds, which will contribute to their higher valorization, to the good functioning of the organism and its health.

The objective

- obtain and to characterize some gluten-free flour mixtures with high nutritional value by partially replacing rye flour (RF) with flax flour (FF) and millet flour (MF);
- determined the optimum proportions to form these high nutritional flour mixtures and evaluate the nutritional profile of gluten-free bread obtained from

Materials:

- Flours: flax flour (FF), millet flour (MF), rye flour (RF)
- The 4 mixtures of flour studied are:
 - ❖ M1: 10%FF:10%MF:80%RF;
 - ❖ M2: 20%FF:20%MF:60%RF;
 - ❖ M3: 30%FF:30%MF:40%RF;
 - ❖ M4: 40%FF:40%MF:20%RF.

Mixtures	Moisture (%)	Fat (%)	Protein (%)	Fiber (%)	Carbohydrates (%)	Ash (%)
RF	14.36±0.07	1.88±0.04	12.54±0.12	3.88±0.25	64.69±0.32	2.65±0.21
FF	6.60±0.17	18.08±0.09	25.33±0.05	20.34±0.42	27.15±0.21	2.50±0.21
MF	5.46±0.27	7.26±0.03	24.22±0.05	2.56±0.08	57.98±0.23	2.52±0.08
M1	12.69±0.11	4.03±0.09	14.98±0.20	5.40±0.04	60.28±0.56	2.62±0.25
M2	11.02±0.04	6.19±0.08	17.43±0.25	6.90±0.53	55.87±0.52	2.59±0.38
M3	9.36±0.13	8.35±0.34	19.88±0.19	8.42±0.69	51.43±0.34	2.56±0.27
M4	7.69±0.32	10.51±0.17	22.32±0.52	9.93±0.65	47.02±0.08	2.53±0.62

Proximate composition of flours and flour mixtures studied

Chemical evaluation of bread samples



Chemical composition (%)	Bread samples			
	CB	BM1	BM2	BM4
Moisture	37.74±0.19	37.44±0.33	37.18±0.28	36.76±0.40
Fat	4.31±0.04	5.58±0.27	6.32±0.32	7.46±0.19
Protein	12.28±0.27	15.79±0.20	17.36±0.33	19.23±0.62
Crude fiber	5.69±0.42	6.95±0.45	7.78±0.26	8.57±0.09
Carbohydrates	37.45±0.08	31.89±0.46	29.15±0.23	25.89±0.11
Ash	2.55±0.05	2.35±0.35	2.20±0.53	2.08±0.88

CONCLUSIONS

- ❖ This study has shown that M1 + M4 mixtures can be successfully integrated into the gluten-free bread recipe, resulting in a value-added functional product due to its superior protein, fiber and fat content compared to RF;
- ❖ The gluten-free bread obtained in this study has an increased content of nutrients such as: protein (15.79% + 22.09%), fat (5.58% + 8.36%) and fiber (6.95% + 9.44%), and a low carbohydrate content (21.67% + 31.89%);
- ❖ The recipe for gluten-free bread recommended following the observations from this study is: flour mixture (30% FF: 30% MF: 40% RF), 2.5% baking yeast, 2% NaCl, 56% water, kneading time of 15 minutes, fermentation time of 60 minutes at 37°C, the baking time of the dough: 55 minutes, the baking temperature of the dough: 200-220°C.

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STUDIES REGARDING OBTAINMENT AND THE CHARACTERIZATION OF DIFFERENT TYPES OF HOMEMADE CHOCOLATE WITH FRUIT ADDITION

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The homemade chocolate is the most important and popular sweet product used in the diet of children and adults, due to its attractive taste and calorific value.



The special nutritional qualities of chocolate are conferred by compounds with biological activity in its composition. The representative compounds from chocolate are antioxidants, macro- and micronutrients, sugar, and stimulants such as caffeine and theobromine.



The objective

→ evaluate the physical, chemical characteristics (content of water, dry content, total mineral, content total antioxidant capacity et al.) and sensory aspects in case of simple homemade chocolate and homemade chocolate with fruit addition, in order to evaluate the nutritional characteristics of the chocolate products.

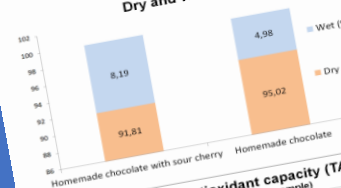
Materials:

Homemade chocolate, sour cherry
cocoa, powdered milk, powdered

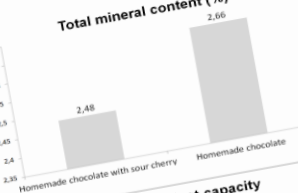
Methods:

- *Spectrophotometric method → total antioxidant capacity (TAC)
- *Dry method → wet and dry matter content
- *Combustion/calorimetry → total mineral content

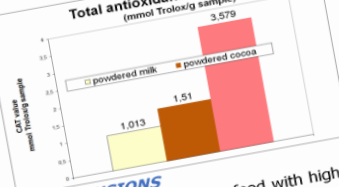
Dry and Wet Content



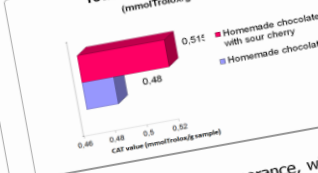
Total mineral content (%)



Total antioxidant capacity (TAC) (mmol Trolox/g sample)



Total Antioxidant capacity (mmol Trolox/g sample)



CONCLUSIONS

Homemade chocolate is a food with high nutritional value, attractive appearance, which is at the same time an important source of energy. Due to the antioxidants contained in cocoa powder, as well as the fruits added to our recipe, which are high in vitamin C, homemade chocolate is a food product successfully used to combat cell aging due to the free radical initiation process and prevention of oxidative stress with negative role on health.

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WORKSHOP



**"Apa alcalină ionizată
microstructurată obținută prin
electroliză = sursă de sănătate și
longevitate"**

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