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RESEARCHES REGARDING THE QUALITY OF PICKLES PLUMS

Timar Adrian*, Purcărea Cornelia*

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea, Romania, e-mail: atimar@uoradea.ro

Abstract

This study is a new aproach regarding a pickle production from different and alternative sources of raw materials. The study was conducted in the frame of project TASTE OF LIFE, REGIONAL HEALTHY FOOD IN SCHOOLS, project number 2014-1-NL01-KA202-1225 in the laboratories of University of Oradea, Faculty of Environmental Protection, Food Engineering Department. There was made the assesment of the parameter quality and prospectives about nutritional value. The parameters taken in study were: Salt content, pH, Dry matter, Humidity, Organoleptical and Microbiological parameters as well. The parameters were assesed to plums and brine too.

Key words: pickle, plums, salt, brine, acidity.

INTRODUCTION

There is an increasing of the strong demands to reduce from the diet clasical products that are on the market in pickle sector because of the intensive use of chemicals in horticulture and the actual trend that recomand "healty" nutrition.

Is important to evaluate if the new products are satisfied the consumers demands and food safety requirements. In this way the study propose a receipe and start the investigation about the pickle quality.

The parameters taken in study were: Salt content, pH, Dry matter, Humidity, Organoleptical and Microbiological parameters as well.

Methods used for analysis are according with romanian standards and are quottation in latest studys.

MATERIAL AND METHOD

Taking samples: Samples were taken from the jars used for packing. We use to take samples for quality control the pipettes and pense. Procedure was according to M., Sestraş R., Cordea Mirela, Tehnică experimentală horticolă, Edit. Academicpres, Cluj – Napoca, 2005.

Obteining working samples: We form successively elementar, brutto, homogenized, laboratory and work samples according with Mureşan T., Pană N.P., Cseresnyes Z, 1986.

There were study first organoleptical parameters in order to eliminate from the study the samples that were not according with specifications. If this parameters was out of normal range of pickle samples were considered out of standards, affected by different kind of degradation and study of those samples was ended.

The parameters taken in study were : Salt content, pH, Dry matter and Humidity, in this way we use Official Methods of Analysis of AOAC International - 19th Edition, 2012.

The study was conducted in 2015 and had the following methodology.

Samples taken in to study 2 kind:

- plums from jars,
- brine from jars.

Number of samples was 5 for each repetition. There were 10 repetitions for each kind of samples. The date of the repetitions are presented in the table below.

Table 1

Experimental plan

Date	Plums	Brine
12.01.2015	5 samples	5 samples
19.01.2015	5 samples	5 samples
22.01.2015	5 samples	5 samples
23.01.2015	5 samples	5 samples
25.01.2015	5 samples	5 samples
02.02.2015	5 samples	5 samples
06.02.2015	5 samples	5 samples
12.03.2015	5 samples	5 samples
17.03.2015	5 samples	5 samples
19.03.2015	5 samples	5 samples

The technology was similar with the proposed by Timar A., Tehnologii generale în industria alimentară, Editura Universităţii din Oradea, Oradea 2010, with the substitution of vegetables with plums. The product was presented in Ecotrophelia 2015 International Competition

Production was conducted in the laboratory research and production, the own laboratory of University of Oradea, Faculty of Environmental Protection, Department of Food Engineering.

All the data were processed by a i3 Acer Aspire 5733 laptop.

RESULTS AND DISSSIONS

All the samples taken in to study had conform organoleptical properties. Results of the research conducted in the chemical analisys were as following.

Table 2

Research results regarding NaCl content, %

Sample	Sample number	Sample weight (g)	Volume of $AgNO_3$ solution used for titration (ml)	NaCl (%)
Pickle plums (fruit)	1	10	4,1	2,40
	2	10	4,2	2,46
	3	10	4,1	2,40
	4	10	4,2	2,46
	5	10	4,2	2,46
	M			2,44 %
Brine	1	10	4,5	2,63
	2	10	4,6	2,69
	3	10	4,6	2,69
	4	10	4,5	2,63
	5	10	4,6	2,69
	M			2,67 %

From the upper table it was shown that the parameter NaCl had higher levels in brine than fruits. This is explained by the difficulties of salt migration from brine to fruit pulp. There was also shown that the values not excede the Maximum limits alowed in this kind of foodstuff.

In the picture below the values are more clearpresented.

Table 3

Research results regarding pH,

Sample	Sample number	pH	Medium pH
Pickle plums (fruit)	1	3,81	3,80
	2	3,80	
	3	3,82	
	4	3,79	
	5	3,80	
Brine	1	3,64	3,65
	2	3,65	
	3	3,63	
	4	3,65	
	5	3,68	

The results regarding pH are very interesting. It is shown that natural acidity of the fruits increase the pH value in the final product. The pH level in fruits is significant bigger than the brine pH.

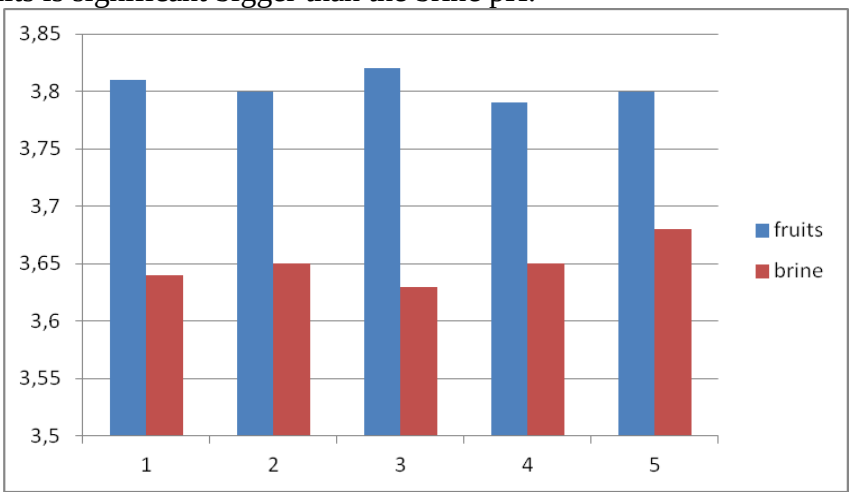

Figure 1. Research results regarding Salt content, %

Table 4

Research results regarding the Dry matter of plums, %

Sample	Sample number	I.R	S.U %	S.U % medium value
Pickle plums (fruit)	1	1,3406	5,1	5,02%
	2	1,2880	4,9	
	3	1,3403	5,0	
	4	1,3406	5,1	
	5	1,3403	5,0	

The Dry matter of the plums was similar to all samples taken in study. That suggest that thechnology proposed is mature, acurate and the values are in the range of the values common for this kind of foodstuff.

Table 5

Research results regarding the Humidity of plums, %

Sample	g	m	m_1	m_2	Water %
Pickle plums (fruit)	55,8888	60,8476	56,4029	4,9588	89,63
	56,7454	60,0132	57,0810	3,2678	89,73
	55,8230	60,1751	56,3320	4,3521	88,30
	54,6255	59,5455	55,3155	4,9200	85,98
	56,2650	61,2520	57,0020	4,9870	85,22
M					87,77

Values recorded for this parameter shown that the fruits maintain their nutricional value, the percentage of water in fruits just slowly increase and

in this way the valuable nutrients were not be substitute by water or brine used for conservation.

CONCLUSIONS

Following the development of the present work there are few conclusions and recommendations:

♣ much Acidification is one means employed to preserve fruits and vegetables,

♣ main types of risks analyzed were physical and chemical and settled major critical control points,

♣ after physico-chemical finished product were obtained results that fall within the maximum permitted by law, so the finished product is declared edible for human consumption,

♣ recommended implementing a HACCP system in each unit of food processing industry and the appointment of a competent team and specialized system design,

♣ recommend a self audit for the collection of samples and analyzing them (hygiene unit and the finished product) periodically at a certified laboratory in order to maintain the product quality,

♣ recommended regular training of the staff by enrolling in training courses on good manufacturing practices (GMP) and Good Hygienic Practices (GHP) because the product can be altered by several risk factors and because of long term storage.

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