

GETTING EATABLE FOOD FROM PUMPKIN DISTRICT IN REPUBLIC OF MOLDOVA

OBȚINEREA ADITIVULUI ALIMENTAR DIN DOVLEAC RAIONAT ÎN REPUBLICA MOLDOVA

IUȘAN LARISA, CARAGIA V.

Institute of Food Technologies, Republic of Moldova

Abstract .Was studied the technology how to obtain eatable food from pumpkins. Was used that kind of pumpkin: Jubileu-70, Carat, Ciarodeica in mash pumpkin and paste with varied concentrates the physical-chemic analysis to obtain the products demonstrated there is a different between them in the nutrition's: for example 5,0-13,5% drying substances; 4,8-8,0% polizaharide; 0,03-0,01% organic acid; starch from 2,0%; 1,0-1,2% cellulose; vegetable protein 0,8-1,2%; pectins substance 0,2-0,5%; 100gr of the working substance from pumpkin are contain 14,0 mg natrium, 170 mg calcium, 12 mg magnesium, 25 mg of phosphorus. Pumpkin is in a contrast with other vegetables, it content a big percent of carotin (from 35mg/100gr), it content vitamins: B₆, B₂, B₁, folic acid, nicotine, pantotenic. Valor of actives acid (pH) are composed 5,2-6,8. Usage domain of mash pumpkin and pastes-industry, sweets and process milk. Types of pumpkin was examined have a good harvest and they are resisted and different climate in Republic of Moldova.

Rezumat. A fost studiată tehnologia de obținere a aditivului alimentar din dovleac de soiurile: Jubileu-70, Carat, Ciarodeica-în formă de piureu și paste de variate concentrații. Analiza fizico-chimică a produselor obținute au demonstrat că ele se deosebesc printr-un conținut sporit în substanțe nutritive și anume: 5,0-13,5% de substanțe uscate; 4,8-8,0% polizaharide; 0,03-0,01% acizi organici; amidon până la 2,0%; 1,0-1,2% celuloză; proteine vegetale 0,8- 1,2%; substanțe pectinice 0,2-0,5%; 100g de substanță prelucrată de dovleac conține 14,0 mg sodiu, 170 mg potasiu, 12 mg magneziu, 25 mg fosfor. Dovleacul se deosebește în comparație cu alte culturi legumicole, prin conținut sporit de carotină (până la 35mg/100g), vitaminele B₆, B₂, B₁, acid folic, nicotinic, pantotenic. Valoarea acidității active (pH-ul) alcătuiește 5,2-6,8. Domeniul de utilizare a piureului și pastei-industria de panificație, cofetărie și prelucrare a laptelui. Soiurile de dovleac cercetate au o recoltă bună și sunt rezistente în condițiile climaterice a Republicii Moldova

Food additive is a substance, which is not normally used as food and which is not used as a characteristic food ingredient of some or of no nutritive value, being added intentionally to the food products on the technological purposes in the process of producing, processing, preparing, treating, packaging, transporting or stocking of such food products, it or its derivatives become or may become a component of these food products directly or indirectly [1]. S. Dumitrache, Professor, Dr. [1] notes that the food additives are substances, which are used in the preparation of the food products in order to improve their qualities or to allow application of the advanced technologies of processing or any natural or synthetic substance, which the producer introduces in the food in a very little quality in order to prolong the duration of the product storage or to

confer such attractive perceptive qualities to the products, that the consumer wishes: appearance, consistency, color, smell, aroma, taste, fragility, etc.

As a result of the informational analysis the directions of use of the pumpkin food additives were determined, namely:

- pumpkin powder is used as a natural colorant and jelifier in the confectionary industry [2,3,4,5].

- in the bakery – it improves the quality of the bakery products, thanks to the complex functional effect in the dough qualities, intensifying this way the process of gases formation in 14-16%; the fermentation cycle length decreases and the bread nutritive value increases, improving the color and enlarging the assortment of the diet bread [6,7].

- the hydrated pumpkin powder increases the nutritive value of the meat and cooked meat products, thus balancing the biologically active and food substances, increasing the property of protection of the meat products membrane, improving the property of the organism antioxidant protection [8,9,10].

- in the preparation of sauces, condiments as a consistency stabilizer, thus improving their color [11].

In the aspect of the pumpkin pastes, purées, products with a high concentration (candied fruits, jams, etc.), with a high content of β -carotene, as an additive of the biologically active substances and an antioxidant in the production of mayonnaises, milk products, cheeses. The use of pumpkin fillings improves the organoleptic properties of the finished product and increases the storage term and the nutritive value of the products [6,8].

The morphological components of pumpkin have the complex properties, and practically all fruit parts are used in the processing: peel in the form of powder, which has the fungicide and bactericide properties, suppressing the effect of the microorganisms and contributes to the increase of terms of storage of the forage [11].

- pumpkin pulp – in the production of the pumpkin food additive as purée, paste, powder;

- pumpkin seeds – to obtain the qualitative pumpkin oil, containing the important quantities of the vitamin E, As, Zn and determines the curative properties, and the seed membrane is used in the production of the food fibers.

Research purpose: To develop the food additive of the high biological value by using the pumpkin growing in the Republic of Moldova. To diversify the assortment of the food products based on the food additive of pumpkin.

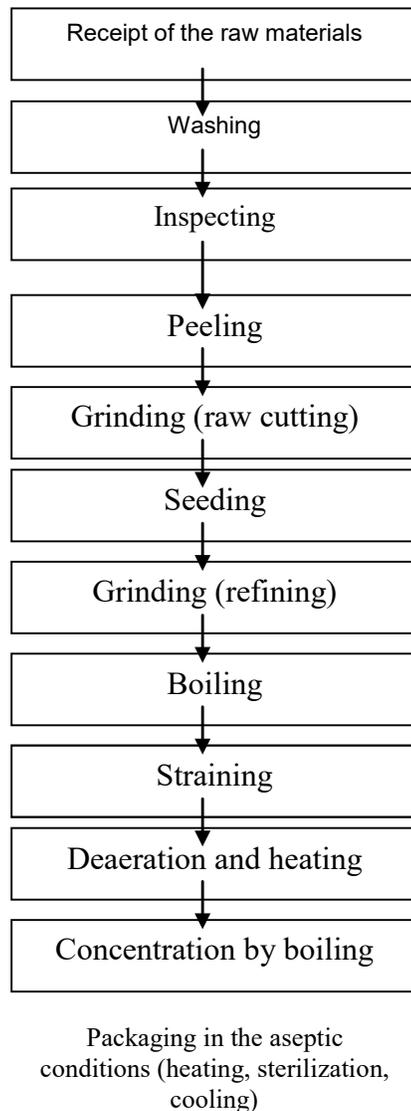
MATERIAL AND METHODS

The determination of the physicochemical indexes of the raw material and the products obtained by processing has been carried out in accordance with the following methods:

- Mass fraction of the soluble dry substances, %– according to GOST 28567-90;
- Mass fraction of the titrable acids – according to GOST 25555.0-89;
- Content of vitamin C – according to GOST 24556-89;
- Content of β -carotene – according to GOST 8756.22-80.

RESULTS AND DISCUSSIONS

Based on the research the type of the food additive of pumpkin was determined – pumpkin pastes in the assortment with the high nutritive value and the preliminary recipes have been developed and their process flowsheet is presented in the fig. 1. In accordance with the process flowsheet, the production of the paste includes concentration of the pumpkin purée in void.



Drawing 1

Fig.1. Process flowsheet of the pumpkin paste production

The pumpkin sort growing in the Republic of Moldova, „Jubileu -70 [10] of all the sorts growing in the Republic of Moldova [10] has been used for the research. In the table 1 the chemical indexes of the pumpkin puree and paste are presented, the sort „Jubileu -70 is distinguished by the rich crops, resistance to the climate conditions and to the pest insects. This pumpkin has a bright yellow color, which is very important in the use of the food additive as a colorant. The pumpkin color depends on the content of β -carotene, which is relatively thermally resistant in comparison with the other vitamins. Based on the table data it results that the paste contains a significant quantity

of β -carotene. In accordance with this index, it supercedes fresh carrot in 5 times [9], which is used as a colorant of the food - butter, confectionary creams, cakes, biscuits. The pumpkin paste presents an interest in the use as a colorant, an antioxidant and a filling in the confectionary and cultured milk foods products. The research on determination of the other important indexes are continued.

Table 1

Chemical indexes of the pumpkin paste

Sample	Mass fraction of the dry substa. %	fructose	glucose	saccha-rose	Total (3+4+5)	Carotene, (mg/100g)	
						100g raw material	100g dry substan-ces
1	2	3	4	5	6	7	8
Purée	8.3	2.04	2.31	3.4	7.75	13.0	156.6
Paste	25	8.17	9.04	11.42	28.63	47.5	144.8

CONCLUSIONS

1. Based on the informational, patent and scientific research, the type of the food additive, which will be obtained from pumpkin has been determined:

- Purée;
- Pumpkin paste (in the assortment);

2. Of the large assortment of the pumpkin sorts, the sort „Jubileu-70” with a high content of carotenoids has been selected as a basic food additive for the use of products processing.

3. The process flowsheet to obtain the pumpkin paste has been developed.

REFERENCES

1. Banu C., Butu N., Lungu C., Alexe P., Rasmerita D., Vizireanu C., 2000 - *Aditivi și ingrediente pentru industria alimentară*. Editura Tehnică, București.
2. Cao Yan-ping, Huo Wen-lan, 2004 - *Стабильность желтого пигмента из тыквы обыкновенной (Cucurbita pepo)*. Baoji wenli xueyuan xuebao. Ziran kexue ban=J. Baoji Coll. Arts and Sci. Natur. Sci. Ed., 24, N 1, c. 44-47. Библи. 5. Кит.; рез. англ.
3. Giurea M. 2002 - *Semnificația E-urilor de pe etichete și ambalaje*. Calita Buletin. Buletin Informativ pentru Industria Alimentară, nr.16.
4. Marinescu I., 2000 - *Adaosuri în produsele alimentare*. Editura Tehnică, București.
5. Procopie R., 2001 - *Bazele merceologiei*. Editura ASE, București.
6. Diaconescu I., 1998 - *Merceologie alimentară*. Editura Eficient, București.
7. Pamfilie R, Procopie R, Dima D., 2001 - *Mărfurile alimentare în comerțul internațional*. Editura Economică, București 2001
8. Каишаури Н., 2000 - *Тыква - лучшее сырье для производства напитков*. Пробл. аграр. науки., N 11, c. 119-121. Груз.; рез. рус., англ.
9. ***, 1987r - *Химический состав пищевых продуктов*. под.ред. И.М.Скурихина, М., Агропромиздат.
10. ***, 2003-2007 - *Registrul soiurilor de plante al Republicii Moldova*.
11. ***, 1985 - *Руководство по апробации бахчевых культур*, М.,Агропромиздат.