

ACTION UV RADIATION ON MICROBIOTA

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Abstract: Vegetables and fruits with their high nutritional value have a favorable effect on the human body. The term conservation of vegetables and fruit fresh is very short. In this work we studied the influence of the most effective conservation methods: UV radiation treatment with conservation in modified atmosphere for mushrooms and cabbage, the carrots, conopides, latues. For the assessment of treatment efficacy was studied index microbiological, chemical and sensorial physico vegetables.

Keywords: Mushrooms, cauliflower, salad, conservation, microbiota, irradiance.

Introduction

Vegetables belonging to different groups are rich in carbohydrates, minerals (Fe, K, P, Ca, Mg, Na), fat-soluble vitamins (A, E, K).

Nutritional value of vegetables and fruits has a positive effect on body metabolism, the immune, etc.

Shelf-life of vegetables (mushrooms, cauliflower, lettuce), fresh is quite short, so time work aims to extend research on retention (preserving fresh) vegetables of these methods:

1. Treatment with UV;
2. Refrigeration and chilled storage;
3. Modified atmosphere storage.

Aim

Research and optimization of conservation of mushrooms and cauliflowers. In the experiments were taken 3 methods:

- Modified atmosphere;
- Cold treatment;
- Ultraviolet irradiation.

Accumulation of CO₂ in packaging quantities, avoid the use of chemical preservatives so little now want to preserve food.

Ratio of O₂ and CO₂ in the atmosphere to keep breathing slows reducing the concentration of O₂ needed to slow respiration varies with temperature.

Materials and methods

For placing the product in a modified atmosphere bags must be used with the following features:

- Good impermeability to gases;
- Physical and mechanical strength;
- Compatibility throughout the product shelf life packaging.

In the experiments performed were used bags of a size appropriate volume of product of complex material polyamide polyethylene (PE / PA).

La etapa I a experiențelor au fost efectuate determinări, pentru a cunoaște încărcarea microbiană a ciupercilor proaspete și conopidelor înainte de ambalare în AM și iradiere.

Table 1 Microbiota dynamics mushrooms and cauliflower before and after irradiation

Product tested	Microbiota before irradiation		Irradiation conditions fungi	Microbiota after irradiation		%, microorganisms inactive or destroyed
	Mesophilic bacteria	Yeast and mold		Mesophilic bacteria	Yeast and mold	
Fresh Champignons Mushrooms	3,2·10 ⁴	3,6·10 ⁴	Lamp 12 W power for 10 min at 40 cm from the source of radiation.	1200	900	69
			Lamp 12 W power for 15 minutes with the radiation source.	900	700	76,5
			Lamp 12 W power for 20 minutes	700	600	81,5
Cauliflower	3,4·10 ⁴	6,5·10 ³	Lamp 12 W power for 10 minutes at 40 cm from the source of radiation.	³ 8,1·10 ³	³ 1,3·10 ³	23,8
			Lamp 12 W power for 15 minutes with the radiation source.	³ 4,6·10 ³	1,06·10 ³	13,5
			Lamp 12 W power for 20 minutes	³ 1,9·10 ³	³ 2,9·10 ³	4,6

At stage II samples irradiated identically packaged and were examined for different storage parameters.

Table 2 Champignons respiration intensity and cauliflower

Product analyzed	Weight, kg	Storage temperature, °C	Retention time, h	Intensity of breath, mg CO ₂	V CO ₂ eliminated mg CO ₂
Mushrooms Champignons	0,200	2-8 ambient	121	59,2	1438
	0,200		121	90,1	2367
Cauliflower	0,200	2-8 ambient	11-14 h	34	145
	0,200		11-14 h	95	89

Research has shown that the process of breathing CO₂ removal by mushrooms and cauliflower depends on storage temperature. The temperature is higher, the breath grows louder.

Activity of the enzyme, polyphenol oxidase, which produces a yellow product was determined by standard method. Research has shown that polifenoloxidazei activity remains almost unchanged after treatment for several days.

Results and discussion

Follow mushrooms stored at room temperature (25-27 ° C) and refrigerated (2-8 ° C) was performed by analysis organoleptic, microbiological and physico-chemical properties.

Table 3 Research activity Champignons mushrooms polifenoloxidazei

Product Name examined	Storage condition	Poliphenol oxidase activity, enzymatic units
Mushrooms Champignons	CO ₂ control, 2-8 ° C, ambient	17
	CO ₂ UV, τ = 20 min. ambient	16
		16
		17

In table 1 are listed the results obtained on microbial load of fresh mushrooms and cauliflower and after treatment.

Table 2 includes the results of the analysis volume and intensity of breath CO₂ removed during storage at ambient temperature and mushrooms in the refrigerator.

Table 3 includes the results of determination polifenoloxidazei activity in different storage conditions.

Conclusions:

All these results allowed us to make the following conclusions on keeping fresh mushrooms and cauliflowers:

- Storing mushrooms and cauliflowers in containers of 2 kg bags packed in PA / PE.
- Irradiation of packaged mushrooms and cauliflowers.
- Storage temperature between 2-8 ° C.

References

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