

COMPARATIVE ANALYSIS OF PHYSICAL-CHEMICAL, MICROBIOLOGICAL PARAMETERS AND THE ELEMENTAL COMPOSITION OF BEE POLLEN AND PERGA

Kudryk B. T., Tikhonov O. I., Martynyuk T. V.
Natsionalny University of Pharmacy, Kharkiv, Ukraine
bohdankudryk@gmail.com

Introduction. Physico-chemical and microbiological parameters, as well as the elemental composition of bee pollen and bee bread, in the process of maturation. Table. Research shows the results of 2013 and 2014, the results of 2015 and 2016. were similar.

The pollen load and Perge concentration of crude protein, flavones-idnyh compounds, crude fat are almost identical. Humidity pollen is significantly lower humidity pollen. The content of free amino acids (amino nitrogen) in Perge and pollen same. This suggests that during pollen maturation occurs hydrolysis of proteins. The concentration of vitamin B12 in Perge was significantly lower compared with the pollen. This is probably due to the activity of certain microorganisms, during pollen maturation. The pH of the 2% aqueous solution of bee pollen and pollen significantly different.

Results and discussion. Number mesophyllic aerobic and facultative anaerobic microorganisms (KMAiFAM) in pollen taken from pyltseulovitelya more than 20 times higher than in Perge, stored in a cell. The content of molds in pollen 47 times more than the pollen.

Pollen maturation studies have shown that a decrease in humidity, a decrease in pH and an increase in the microbiological purity perge occur mainly in the first 9 days after putting it in a cell bees. So reduction in moisture beebread first 9 days of its maturation in 2003 amounted to 100.0% in 2004 g - 96.2% of its total reduction during the entire maturation (15 days). Reduction of pH 2 on average per year during the first 9 days of ripening was 80.4% of the level reduction of this index and the number of molds and KMAiFAM was 75.7% and 89.3% respectively in the first 9 days fermentalization beebread .

Conducted in 2013-2014. study content perge and pollen-ing obnozhka macronutrients (K, Na, Ca, Mg), essential trace elements (Cu, Zn, Ag, Fe, Cr) and toxic elements (Cd, Pb, Sn, As, Hg) showed times -lichy between products according to their composition.

Also found no significant changes in concentrations of cations (K^+ , Na^+ , Ca^{2+} , Mg^{2+}) and anions (Br , Cl^- , SO_4^{2-} , NO_2^- , NO_3^- , F^- , PO_4^{3-}) in perge during its ripening. Among the investigated cations not detected the presence of ammonium cation being

an elementary decomposition product of amino acids and proteins, ie. E. During pollen fermentalيزاتsii no decomposition of its protein components.

Table

Physico-chemical and microbiological parameters of bee pollen and pollen

Indicators	Bee products	The values of indicators	% of pollen	Credibility with pollen difference
Water, %	pollen	20.80 ± 0.361	100.0	-
	ambrosia	17.93 ± 0.780	86.2	p<0.05
Crude protein, %	pollen	24.33 ± 1.220	100.0	-
	ambrosia	23.13 ± 1.968	95.1	p<0.05
The amine nitrogen,	pollen	1.840 ± 0.0865	100.0	-
	ambrosia	1.903 ± 0.0551	103.4	p<0.05
Flavonoid compounds, %	pollen	3.567 ± 0.2333	100.0	-
	ambrosia	3.327 ± 0.2949	93.3	p<0.05
Vitamine B6, мг/100 г	pollen	0.258 ± 0.1774	100.0	-
	ambrosia	0.784 ± 0.4920	303.9	p<0.05
Vitamine B12, мг/100 г	pollen	3.148 ± 0.3908	100.0	-
	ambrosia	1.758 ± 0.2679	55.8	p<0.05
Crude fat, %	pollen	2.927 ± 0.3950	100.0	-
	ambrosia	3.410 ± 0.1997	116.5	p<0.05
pH	pollen	5.397 ± 0.0353	100.0	-
	ambrosia	4.087 ± 0.2576	75.7	p<0.05
KMAiFAM	pollen	433.3x10 ³ ± 433.3x10 ³	100.0	-
	ambrosia	20.0x10 ³ ± 20.0x10 ³	4.6	p<0.05
Mould	pollen	233.3 ± 98.88	100.0	-
	ambrosia	5.0 ± 3.42	2.1	p<0.05

Conclusions. In connection with the studies it can be concluded that pollen is not only identical in physical-chemical, microbiological parameters and elemental composition of bee pollen, but also surpasses it in some database.