



DECONTAMINATION OF NATURAL HONEY BY IRRADIATION

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Bee honey is usually contaminated with numerous microorganisms. Among these predominate osmophylic yeast mainly the strains of *Saccharomyces*, *Schizosaccharomyces* and *Torula*. *Bacillus* and anaerobic *Clostridium* spores and small fragments of mould fungi may appear in honey.

The effect of irradiation on microbiological decontamination of honeys is shown in table 1.

Table 1. Effect of irradiation at the dose 10 kGy on the count of microorganisms in honeys.

No	total count of aerobic bacteria		total county yeast and moulds		total count clostridium spores	
	before irradiation	after irradiation	before irradiation	after irradiation	before irradiation	after irradiation
1	11 000	10	900	20	10	10
2	460 000	<10	<10	<10	10 000	1 000
3	500	<10	<10	<10	100 000	10
4	50	10	10	<10	100	10
5	800	40	<10	<10	100	<10
6	60	<10	10	<10	100	<10
7	10	<10	10	<10	100	<10

The experiments have shown, that irradiation process decreases in honeys the number of aerobic bacteria and fungi (yeast and moulds) and anaerobic spores of *Clostridium* by 98,1% on average.

The results of irradiation on antibiotic activity and 5-HMF content in decontaminated honey are given in table 2.

Table 2. The effect of irradiation on antibiotic activity and 5-HMF content in honey.

Honey samples	Antibiotic activity		
	honey dilution inhibiting growth of standard strain <i>S.</i> <i>aureus</i> FDA 209 P	inhibine value in units	5-HMF content (mg/100g)
Before irradiation			
1	1:4	1	1,15
2	1:8	2	1,15
3	1:8	2	0,96
After irradiation			
1	1:16	3	1,15
2	1:16	3	0,86
3	1:8	2	0,86

It has been observed, that antibiotic value increased from 1,8 to 2,6 on average and the content of 5-HMF decrease from 1,34 to 0,96 mg/100g.

CONCLUSIONS

Radiation at the dose of about 10 kGy decreases effectively the number of microorganisms and its antibiotic activity and stability (5-HMF), while do not influence the organoleptic value of honeys. It means, therefore, that radiation treatment could be adapted in practice for production of honey characterized by a high level of microbial purity.