

INCREASE OF SHELF LIFE OF COOKED SAUSAGES IN FIBROUS CASINGS

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Cooked sausages manufactured in fibrous casings – one of the most popular kinds of sausage items. They are in everyday demand of consumers of all age groups. However, such sausages have a limited shelf life. In Russia cooked sausages of higher grade are kept in suspended state at temperatures 0 - 8° C and relative humidity of the air 75-85% for not longer than 72 hours, and of the first and second grade - during 48 hours since the end of their technological process (according to GOST (State standard) 23670-79 and GOST 20402-75) /1/.

At the present time to increase the shelf life of cooked sausages, mainly various multi-layer vapor-gas-impermeable casings are used and their process technology and properties are constantly improving. They allow to create some preserving effect for cooked sausages, and this certainly leads to some loss of their traditional flavor attributes. Therefore, the search for the methods allowing to increase the shelf life of cooked sausages in fibrous casings has been an urgent problem up to the present time.

The authors of the article have presented the developed technology of modification and protection of safety of the surface of cooked sausages, being manufactured in fibrous casings. For this purpose a special protective composition called "Allucid" has been developed that is intended for antimicrobial protection of fibrous casings used in production of cooked sausages, frankfurters, sardelles (hygiene Certificate of Ministry of Health Protection of RF is available). The composition "Allucid" and the method for its application for treatment of sausages casings have been patented.

This preparation possesses wide spectrum of application, with respect to the inhibition of development of fungi, yeasts, putrefactive bacteria, actinomycetes. It has low toxicity, possesses sanitary and ecological safety, has a favorable influence on behavior of the casings. It contains preserving and special substances allowed for contact with food products.

The developed technology of antimicrobial protection of the surface of cooked sausages involves soaking of fibrous casings in a solution of the antimicrobial preparation "Allucid" (not in a tap water) prior to forming of the sausages. Frying and cooking are made according to technological regimes of cooked sausages production. After cooking the sausages are chilled by cold tap water (spraying), or with cold air. In case of using water for chilling, the sausages must be additionally sprayed with the solution of the "Allucid" preparation.

In case of using cold air flow for sausages chilling their spraying with antimicrobial preparation is not obligatory. The shelf life of cooked sausages, produced according to the developed technology with the treatment of casings with "Allucid" preparation increases up to 8 days.

The carried out microbiological investigations confirmed stability of safety parameters of final products during the whole storage period of cooked sausages. Sensory characteristics didn't change during storage period and were characteristic of this kind of products /2/.

Simultaneously with the analysis of quality of cooked sausages the authors analyzed the washouts from their surfaces. The data in Table 1 show that the number of aerobic and faculty-anaerobic microorganisms isolated from the washouts from sausages' surfaces, treated with the preparation "Allucid" during the whole period were less than from the surface of sausages manufactured according to usual technology.

Table 1

Casing and its treatment	Presence of aerobic and faculty-anaerobic microorganisms, CFU/cm ² of the surface of sausages during storage, days				
	1	3	6	8	11
Fabios according to usual technology	40-45	45-85	More than 1000		
Fabios treated with "Allucid"	40-45	30-65	30-60	35-75	75-95

The investigations of strength of Belcosin and Fabios casings, the results of which are presented in Table 2, show that the suggested method of their modification doesn't influence the quality of the casing itself.

In the development of technology of protection of cooked sausage surface special attention was given to the control of the content of the antimicrobaial additive both in the sausage casing, and in the upper layer of the product. Gas-liquid chromatography method was used for this purpose. This method strongly suggests that the product remains safe, because the preserving additive is reliably secured on the surface of sausage links and doesn't penetrate into the product (3).

The developed technology for increasing the shelf life of cooked sausages with the preparation "Allucid" allows to reliably secure the antimicrobial additive in the fibrous casing, which ensures the effect of long protection of sausages.

Thus, the developed method of protection of surface of cooked sausages in fibrous casings with the use of antimicrobial preparation "Allucid" allows to increase their shelf life without change of traditional taste of these products. Microbiological safety and high quality of the cooked sausages are also achieved in the case of using of "Allucid" /2,3/.

The developed technology of protection of the surface of cooked sausages with the use of the preparation "Allucid" was tested at meat-processing plants in Russia, there were no censures from trade.

The authors invite to cooperation specialists of meat-processing plants, who want to prolong the shelf life of sausage products in fibrous casings and ensure the safety of production from sanitary-hygiene and environmental point of view.

References

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Table 2

Table 2							
Casing	Characteristics of strength of fibrous casings						
	Regime of treatment	Thickness,mcr	Destroying stress, σ_p mPa		Relative elongation, E_p , %		Water absorption, $\Delta M/M \times 100\%$ (during 20 min.)
			Longitudinal	cross	longitudinal	Cross	
FABIOS	Dry	95+ 10	-	-	-	-	-
	Soaked in water	135 + 10	18	10	11	16	93.5
	Treated according to technology of MGUPT	135 + 10	18	10	12	15	146
BELCOSIN	Dry	85+ 5	-	-	-	-	-
	Soaked in water	170+ 10	13.5	10.5	18	15	85
	Treated according to technology of MGUPB	170 + 10	12.5	11.0	19	16	115