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## The Use of Antioxidants in the Meat Industry.

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### ABSTRACT

The food - one of the most important factors of communication of the person with environment. However the sharp deterioration of an ecological situation connected with technical progress affected quality of the food consumed by the person that, in turn, led to emergence new and to sharp increase in number of the known diseases connected with improper feeding long ago. Therefore now creation of specialized food for various age groups, both dietary, and the treatment-and-prophylactic direction with high qualitative characteristics - the main objective for specialists of the food industry defining health of the population and preservation of its gene pool in the future. The research of functional and technological properties: determination of the water connecting ability Grau and Hamm's by method in Volovinskaya V.P. and Kelman B. Ya. modification; definition of peroxide number of fat by a titrimetric method. The research of microbiological indicators: definition of quantity of mesophilic aerobic and facultative and anaerobic microorganisms by a crops method in Petri's cups in accordance with GOST 10444.15-94; definition of quantity of bacteria of group of colibacilli (coliforms) in accordance with GOST 30518-97.

**Keywords:** antioxidants, meat industry

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## INTRODUCTION

The development of industrial production of foodstuff staticizes problems of preservation of their quality and increase in expiration dates. The products are subject not only microbiological damage, with fight with which is being helped by preservatives, but also oxidizing. The role of defenders of foodstuff from oxidation of the fats containing in them carry out antioxidants. The antioxidants slow down process of oxidation by interaction with air oxygen, interrupting reaction of oxidation or destroying already formed peroxides. Thus antioxidants therefore, the higher them the dosage, the is more a product expiration date are spent. But infinitely the expiration date can't be increased: higher than 0,02% are inexpedient to lift concentration of antioxidant for technological and hygienic reasons.

The antioxidants considerably brake oxidation speed. In practice process of mutual strengthening of effect of different antioxidants is often observed.

There is an opinion that antioxidants prevent the negative effect of free radicals which had by them on cages of live organisms – thanks to it aging process is slowed down.

The considering the high content of fatty tissue in many meat products, the problem of protection of lipidic part of meat products against oxidizing damage is being especially actual. The oxidizing damage leads to reduction of periods of storage and decrease in a nutrition value of a ready-made product. This problem has to be solved not only by wide use of refrigeration units, packing, etc., but also more active and effective methods (without use of low temperatures), namely, by braking and suppression of oxidizing processes by various biologically active agents. It is important to note that the used biologically active agents have to be not synthetic preparations which are sometimes unacceptable for use in foodstuff, and preparations of a natural origin.

## RESULTS AND DISCUSSION

For research of influence of Lavitol on functional and technological properties of meat model forcemeats defined the moisture connecting, moisture-holding abilities.

The control was served by the forcemeat of boiled sausage developed on traditional technology. Prototypes were minced systems with use of beef, a horse-flesh, mutton and Lavitol.

The model forcemeats were cooked on a kutter. Lavitol brought together with meat raw materials at a stage of drawing up forcemeat.

Brought Lavitol with various ratio of ingredients in meat model forcemeat. The obtained data on research of functional and technological properties are presented in table 1.

**Main functional and technological properties meat farshevykh of systems with various level Lavitola**

Name of samples	Indicators, %			
	moisture content	BCC	BYC	ЖУС
Control	65,3 ±1,2	63,4 ±0,8	48,4±1,8	52,5±0,9
Model samples of forcemeat from 50% replacement of NaNO <sub>2</sub> Lavitol (food fibers: Lavitol in the ratio 2:1:0,5)	72,3 ±1,1	64,6±1,2	63,3±0,6	55,3±1,1
Model samples of forcemeat from 50% of NaNO <sub>2</sub> Lavitol (food fibers: Lavitol in the ratio 2:1:0,75)	73,3±1,4	64,3±1,1	64,4±1,2	55,2±1,2
Model samples of forcemeat from 50% replacement of NaNO <sub>2</sub> Lavitol (food fibers: Lavitol in the ratio 2:1:1)	74,2±1,2	65,1±0,9	65,8±0,8	56,1±1,3

It is established that the model forcemeats with Lavitol have high functional characteristics which surpass similar indicators of control samples. It testifies to possibility of receiving compoundings of the combined meat products with high functional and technological properties.

For research of antioxidant action Lavitol and increases in periods of storage of sausages were created two groups: skilled and control. In control group sausage was cooked on traditional technology, and in skilled group to forcemeat at a kutterovaniye added cooled to plus 4 C About the hydrated vegetable and proteinaceous composition with Lavitol.

It is established that at development of boiled sausage in a natural cover addition of vegetable and proteinaceous composition with Lavitol improves organoleptic characteristics strengthening of aroma of a prototype on 0,2 points in comparison with the control is, so, revealed. Use Lavitol allowed to increase sausage periods of storage for 12 hours as education the peroxide of connections in a sample with Lavitol was less intensive in comparison with a control sample (table 1).

**Table 1: Influence of vegetable and proteinaceous composition on sausage periods of storage**

Indicator	Control sample	Prototype
Consistence, points	5	5
Aroma, points	4,7	5
Storage period	49	60
Exit of ready production, kg	110	115

On the basis of experimental data it is possible to draw a conclusion that the vegetable and proteinaceous composition possesses pronounced antioxidant action on a product, and, therefore, is perspective for use. Therefore use Lavitol possessing strong bactericidal property, significantly expands the range of perspective antioxidants for the combined meat products.

The boiled sausages belong to perishable goods. For the purpose of justification of periods of storage dynamics of development of microorganisms at storage was studied (table 2).

**Table 2: The changes of microbiological indicators of boiled sausage with use of vegetable and proteinaceous composition**

Storage time at t =4 °C, days	The general microbic obsemenennost, C/g
0	$5,7 \times 10^2$
2	$5,8 \times 10^2$
4	$6,2 \times 10^2$
6	$6,9 \times 10^2$
8	$1,3 \times 10^3$

From the obtained data it is visible that at storage of prototypes of sausages at a temperature of 0-4 C the general microbic dissemination within 6 days increases slightly and doesn't exceed admissible norms.

The recommended period of storage till 72 o'clock from the moment of the end of technological process.

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