TO THE QUESTION OF HAM PRODUCE

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Abstract. *Nowadays it is topical to make technologies that can allow reducing the cost of meat products guaranteeing the set quality standards to a customer. In the article there are results of the research of the bio-modification of low grade meat raw materials and their use in ham production technology.*

Keywords: *starter cultures, ham, technical specifications/conditions, production.*

Introduction. The main goal of meat industry is intensification of production and simultaneous quality increase of the products made. One of the perspective trends of technologies development is making and using in meat products the biologically active substances on the base of micro-organisms interact products [1,2,3]. Such preparations are known as bacterial starter cultures (bacterial starters).

Bacterial starter cultures allow hydrolyzing the connective tissue of meat raw materials due to which its water binding and water holding capacities grow, its toughness decreases, its nutritious capacity and finished products output increase [4,5].

Many scientists have proved the perspective of starter cultures use that consist of selected microorganisms strains which are target directed on the technological process reduction and obtaining stable quality indices of the product by using the meat raw material rich in collagen [6,7,8].

In the fermentation process the bacterial starter cultures synthesize different exo- and endo-enzymes. Due to their proteolytic activity many bacterial starter cultures take part in improving the meat products consistence. Combining collagenases and elastases they improve value and tenderness of raw meat with considerable amount of connective-tissue proteins [9,10]. So, biosynthesis of lactic and other organic acids by bacteria (foremost lactobacillus and micrococcus family) promote increasing tender and juicy meat quality because they cause collagen swelling and thus promote the tissue opening and low molecules binds hydrolyzing. The hydrogen ion exponent value (pH) of the raw materials plays an important role here. Due to the low pH value index the activity of the intracellular enzymes cathepsins grows, the optimal pH value of which is 4,5-3,8 [10-12].

The research goal is to study the influence of the starter cultures on the model mince out of low grade meat raw materials.

The research methods. The research object is the influence of micro-organisms consortiums on the raw meat materials. The micro-organisms cultivation was done by a surface way. This method is that micro-organisms are grown on the surfaces of hard and liquid nutrient medium. Hard nutrient mediums on the glucose basis were used for the research. The ready mediums were poured into Petri dishes and then the cultures were seeded on the sterile nutrient medium and the dishes were placed in the thermostat at 37^{o}C [1,4].

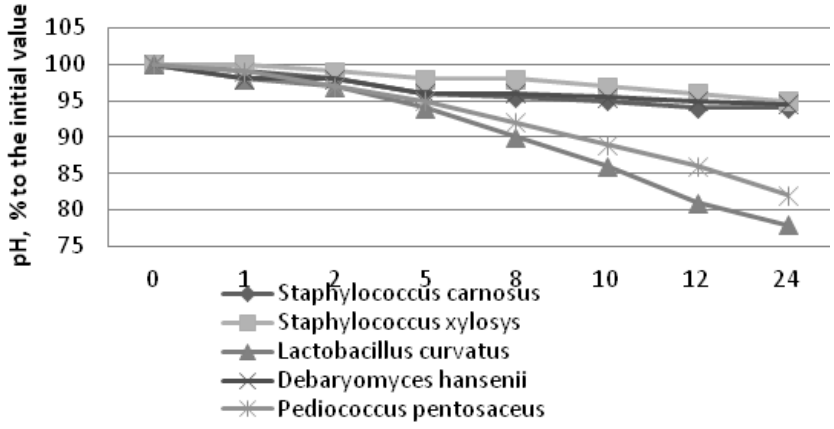
During the research the experiment to detect the microorganisms growth on the raw meat materials were carried out and the possibility to modify the connective proteins with their help.

To study the microorganisms growth on the raw meat materials the model mince that consisted of 50 % beef second quality and 50 % semi fat pork into which the researched microorganisms were introduced.

The activation of cultures was done in the microbiological box according to the instruction of the microbiological control. The experiment was carried out for 24 hours.

The research results. For the experiment we took the cultures that showed their qualities most actively at summer sausage produce. One of the most important indices for starter cultures is change of physical chemical and functional technological indices of the raw meat materials. To produce sausage the most significant index of the raw materials is water binding capacity (WBC), water holding capacity of the raw meat materials and the pH change of the mince [13,14].

The decrease of the pH value of the model mince is shown in picture 1.



Pic. 1 – pH value change of the model mince

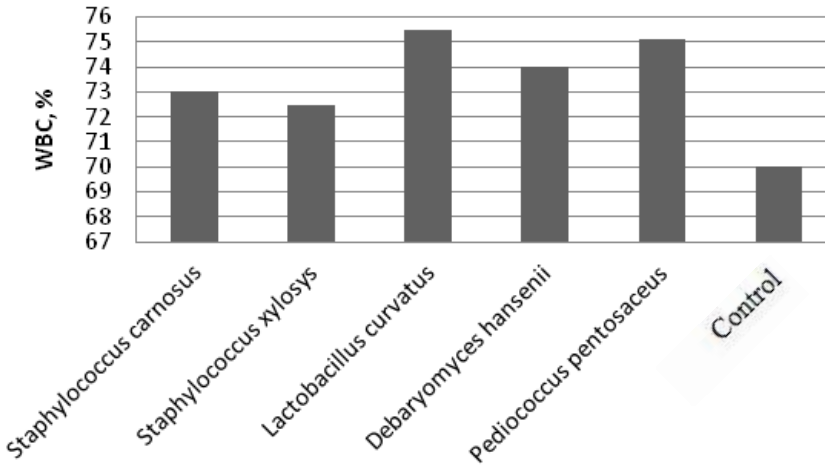
The research of the pH value of the model mince proved that the growth of cultures Lactobacillus curvatus, Pediococcus pentosaceus is accompanied by a significant decrease of pH value

of the model mince. The decrease of pH value is due to appearing the lactic acid in the vital activity. The lactic acid is used in meat and meat products produce due to its high diffusion abilities, anti-microbial effect, an ability to plasticize proteins, speed the meat ripening, open the collagen bundles and regulate the pH value and taste.

As the result of lack of acid-forming capacity the pH value decrease of the model minces with cultures Debaryomyces hansenii,Staphylococcus carnosus, Staphylococcus xylosys took place insignificantly.

The proteins of the muscle tissue are known to have a higher WBC than the connective tissue proteins and the water binding capacity of the trimmed meat reduces with decrease of the meat materials grade [10,15].

The results change of water-binding capacity of model minces is given in picture 2. control

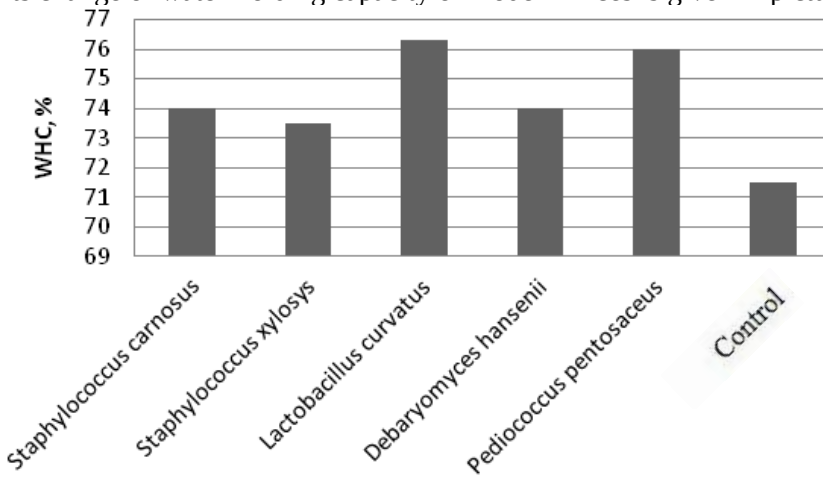


Pic. 2 – The change of the WBC of the model mince

From the given data we can see that the control sample of the model mince without the introduced researched cultures are lower than the experiment samples of the model mince by the water binding capacity. The received data show that if the experiment cultures are added we can observe the tendency to the WBC increase of the model mince.

The water holding capacity of the raw materials is characterized by the ability to hold water during the thermo processing. This value provides the output of the finished product and is the most important technological index.

The results change of water-holding capacity of model minces is given in picture 3.



Pic. 3 – The change of the WHC of the model mince

The given results prove that by introducing the researched cultures into the model mince there is a tendency to the WHC increase which is more expressed in the acid-forming microorganisms Lactobacillus curvatus, Pediococcus pentosaceus.

Conclusions. The research of the starter cultures was done on the model mince of the low value meat materials. The introduction of Lactobacillus curvatus, Pediococcus pentosaceus cultures lead to the shift of the pH value of the model mince to the acid side and increase the water binding and water holding capactites of the model mince. The introduction of Debaryomyces hansenii, Staphylococcus carnosus, Staphylococcus xylosys does not lead to a significant change of the pH value, WBC and WHC of the model mince. We think that adding into the recipe the mentioned above cultures will bring to significant changes of the functional technologicl qualities of the collagen containing meat materials.

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