

## **Low temperature modification of meat materials by the food additive "Magnetofood"**

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The introduction of the food additive "Magnetofood", which is a highly dispersed system (70-80 nm) of oxides of two- and trivalent iron, in the content of minced meat improves the functional and technological properties of the material and leads to a decrease in losses during heat culinary processing and increase the yield of the finished products. The additive of the modifier was carried out in the amount of 0,05%; 0,10%; 0,15% of the mass of meat raw material at a temperature  $(6 - 18 \pm 1)$  °C

In order to establish the rational quantity of the Magnetofood nutritional supplement in the formulation of beef stewed beans, the water (HUS) and fat-retaining (ZHU) ability, the emulsifying capacity (EH), the emulsion (CE) stability in the freshly prepared beef minced meat samples and cooled at a temperature  $(-6 - -18 \pm 1)$  °C after 24 hours of storage in a closed container.

Analyzing experimental data, it should be noted that in the prototype there is a gradual growth of the university, LMU, ES, CE with an increase in the mass fraction of "Magnetofod" compared with the control sample: the university is increased by  $(8,0 \pm 0,9)\%$ ; ZHUZ - on  $(9,2 \pm 0,7)\%$ ; EZ - at  $(8,3 \pm 0,9)\%$ ; CE - on  $(10,0 \pm 0,8)\%$ .

A similar dynamics of changes in these parameters is observed in experimental samples of cooled minced meat in the temperature interval  $(-6 - -18 \pm 1)$  °C in 24 hours of storage. The best result was recorded at the mass ratio of Magnetofood 0,10% of the mass of meat raw materials. Further increase of the share of "Magnetofood" additive to 0.15% practically does not affect the change of indicators.

We believe that the influence of the nutritional supplement "Magnetofood" on the functional and technological properties of meat cut products is due to surface-active, sorption, complexing properties of the polarized nanoparticles of the additive; their catalytic activity, thermal stability during heat treatment, bio-affinity with many proteins, which ultimately causes the emulsifying, water- and fat-binding, water and fat-retaining capacity of "Magnetofood" in the conditions of low-temperature storage.

Thus, the low temperature modification with the addition of "Magnetofood" of meat minced meat increases the level of moisture and fat content and the formation of stable emulsions, in particular, with the lipid and protein components of meat forcemeat systems.