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**INFLUENCE OF MORPHOLOGICAL STRUCTURE
OF PORK ON THERMOPHYSICAL CHARACTERISTICS
IN THE PROCESS OF FREEZING-DEFROST**

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Frozen meat has become an important product of international trade [1], and modern consumers want the quality of frozen products to match the level of chilled [2; 3]. The search for new, modern and economical methods of preserving the quality of frozen meat products is important [4-6].

It is known that the loss of meat during refrigeration is affected by the content of adipose tissue [7-9].

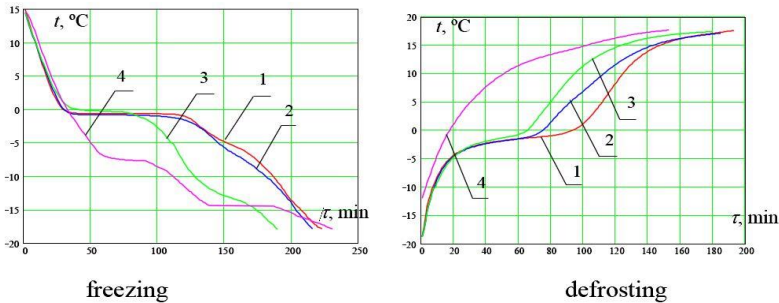


Fig. 1. Thermogram of the process of freezing-defrosting meat systems:

1 – lean pork; 2 – semi-fat pork; 3 – fatty pork; 4 – lard

Table 1

Parameters of the temperature dependence of effective specific thermal capacity of comminuted meat systems pork of different varieties and lard

Parameters	Pork			
	lean	semi-fat	fatty	lard
<i>At freezing</i>				
$T_{cr}, ^\circ\text{C}$	-0,7	-1	-0,4	-
$\Delta T_{cr}, ^\circ\text{C}$	1,5	1,9	2,6	-
$\Delta H_{cr}, \text{J/K}$	88	74	55	-
$\Delta H, \text{J/K}$	207	189	179	258
$\Delta \omega$	0,26	0,22	0,17	-
<i>At defrosting</i>				
$T_{cr}, ^\circ\text{C}$	-1,7	-2,1	-1,9	-
$\Delta T_{cr}, ^\circ\text{C}$	8,1	8,8	7,2	-
$\Delta H_{cr}, \text{J/K}$	95	59	51	-
$\Delta H, \text{J/K}$	180	164	154	103
$\Delta \omega$	0,28	0,18	0,15	-

The aim of the study was to determine the influence of the morphological structure of pork on thermophysical parameters in the process of freezing-thawing.

To obtain meat systems used category II pork according to DSTU 7158: 2010 "Meat. Pork in carcasses and carcasses. Specifications": lean pork (muscle tissue with a mass fraction of adipose tissue 10% in the skin or without the skin); semi-fat trimmed pork (muscle tissue with a mass

fraction of adipose and connective tissue 30-50% in the skin or without the skin); Pork trimmed fat (muscle tissue with a mass fraction of adipose and connective tissue not more than 80% in the skin or without the skin); lard sausage lateral, backbone according to the current regulatory documents. The technique for obtaining minced meat systems and the method of research into thermal-physical characteristics of minced meat systems are described in paper [10].

Examples of the thermograms curves of samples freezing-defrosting were of the shape shown in Fig. 1.

For revealing and comparing thermodynamic changes during refrigeration, used the method of to determine the effective specific thermal capacity by thermograms of freezing-defrosting and a set of information parameters (Table 1) associated with it [11].

The study of thermophysical characteristics of meat systems based on minced pork with different chemical composition in the process of freezing-thawing. Information parameters of temperature dependence of effective specific heat capacity are received: T_{cr} – cryoscopic temperature, °C; ΔT_{cr} – cryoscopic interval of temperatures, °C; ΔH_{cr} – specific heat capacity of phase transition in a cryoscopic interval of temperatures, J/K; ΔH is the change in enthalpy in the temperature range (ΔT) of the measured sample, ΔT , J/K. The proportion of moisture ($\Delta\omega$) – that share of moisture, which changes its aggregate state in a cryoscopic interval of temperatures). It is shown that the morphological structure of meat (the ratio of muscle, connective and adipose tissue) and its chemical composition significantly affect the thermophysical parameters of meat systems in the process of freezing and thawing. It is revealed that under the conditions of freezing-thawing cycle with increasing mass fraction of fat in the meat system there is an increase in cryoscopic temperature, decrease in cryoscopic temperature range, increase in moisture content, which changes its physical state in cryoscopic temperature range, increase in specific heat of phase transition. cryoscopic temperature range. The nature of the change in the cryoscopic temperature range allows us to determine that the presence of fat significantly affects the freezing-thawing process.

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