THE INFLUENCE OF THE DESIGN PARAMETERS OF MEAT GRINDERS ON MERCHANDISING PROPERTIES OF CHOPPED MEAT PRODUCTS AND PRODUCTS FROM THEM

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The authors study the influence of the design parameters of meat grinders such as the diameter of the holes of knife grids at this property of chopped meat products and semi-finished products as a specific surface area of minced meat. The original laboratory device is designed for the determination of ground meat dispersion, the use of which lets more accurately determine the surface area of the dispersed products.

The lack of systematic research data concerning the impact of the design parameters of meat grinders on the level of products crushing, and the corresponding change in the mincemeat properties do not to optimize quality parameters of finished products and improve the technology of their production. It is known that the degree of grinding meat determines the consistency of semi-finished and finished products, forms of moisture bonding and structure of the product, its viscosity, elasticity, flexibility, output of the finished product, its juiciness and tenderness [5]. However, the literature there are almost no comprehensive data on the impact of the diameter holes of knife grids of meat grinding and multiplicity in quality parameters of semi-finished and finished products.

To determine the relationships between the diameter of the holes in knife grids, the angle of sharpening the edges of their holes, angle sharpening of the cutting edges of the knives' blades and a particle size of mincemeat of plant and animal origin, we have conducted comprehensive research of the results presented in Fig. 1, 2 and 3. To be able to compare the results of the research with the data from other scientists [5] involved in the determination of the dispersed composition of different types of mincemeat obtained in cutters, the results of the experiments concerning the determination of the dispersed composition of mincemeat from beef, obtained on grinders are represented as three-dimensional image in Figure 1. The results of the dispersed analysis of vegetable stuffing are presented in a two-dimensional form, as they are, in our view, more convenient for use (Fig. 2, 3).

Analyzing the dependence of the dispersed beef mincemeat on the diameter of the holes in knife grids (Fig. 1), it may be noted that the stuffing being poly-disperse system includes fractions with the average particle size greater than the diameter of the holes in knife grids. During grinding in a meat grinder by means of knife grids with the holes’ diameter 9 mm, this fraction constitutes 9%. In case of chopping by knife grates with the holes’ diameter of 1 mm, the fraction increases to 64%. The maximum value of fractions, an average particle size of which is 7.5 and 1.5 mm respectively are milled by knife grids with the holes’ diameter of 9 mm and 1 mm.

All the above mentioned means that the diameter of the holes in knife grids is not the only though the main parameter that determines the size of the particles, because the distribution of stuffing particles is remotely close to the law of normal distribution of a random variable.

Keywords: mince, grind, grinder, dispersion, property.