

Measurement and control of meat qualities (metrological aspects)

SUKHANOVA S.I., SAVTCHENKO A.F. and USKOV V.I.*, BONDARENKO V.K.*

The All-Union Meat Research Institute, Moscow, USSR

*The Moscow, Technological Institute of Meat & Dairy Industries, Moscow, USSR

Product quality is defined as a combination of its characteristics stipulating its ability to meet definite requirements according to the purpose. To evaluate meat products quality the following characteristics are used: content of components that organism uses for biological synthesis and energy costs supply; organoleptical (appearance, colour, aroma, consistency) parameters; toxic compounds and pathogenic microorganisms' absence /1/. These characteristics may be an object of measurement and control. Nowadays, a system of measures, methods and means of measurement, aimed at providing and maintaining meat product quality at the stage of development, production, storage, transportation and consumption, is introduced at meat industry plants. The problem of quality includes a full "vital" cycle of a product.

The main tasks of product quality monitoring system are the following:

- product quality formation at the stage of its development;
- providing the given product quality at manufacture;
- maintaining the achieved level of quality at storage, transportation and consumption.

One of the main aspects of meat product quality measurement and control is a metrological support - determination and use of scientific bases, technical means, rules and norms necessary for a desired accuracy achievement /2/.

Let's formulate the main tasks of product quality metrological support:

- analysis of measurements at meat industry plants, development and use of measures on metrological support improvement;
- establishment of used parameters rational nomenclatures and optimum norms of measurements accuracy in manufacture;
- development and implementation of modern measuring procedures, means of measurement and examination devices;
- introduction of state and industrial standards; development and implementation of normative-technical documents, limiting norms of measurement accuracy, of measurement procedure and other points of metrological support of new meat products development (manufacture, certification, storage and transportation);
- metrological examination of normative-technical documents for products;
- inspection and metrological certification of measuring means used at plants;
- certification of measurement procedures use;
- control for state, use and repairing of measuring means and observance of metrological rules, requirements and standards at production.

Analysis of measurements state, made at meat plants, showed that raw materials characteristics, technological parameters measurement, with the given accuracy, and sanitary-hygienic norms control influenced products quality.

As it is mentioned quality forms on the stage of product development. This is why technological documents metrological examination is very important, proposing analysis and evaluation of technical solutions on cselection of parameters that should be measured, and establishment of accuracy norms, and providing procedures and means for measurements of technological processes.

Technological documents metrological examination is aimed at measurements efficiency provision at meat and meat products control during their "vital" cycle, and is done according to the established rules and other normative-technical documents. The authors have developed branch standards regulating the problems of normative-technical document metrological examination in the branch /1,2/. Meat products quality parameters depend on raw materials composition and characteristics, on used formulations and technological treatment regimes.

As the investigations showed products quality is effected by:

- rationality of measured parameters nomenclature at control aimed at quality control efficiency and significance provision;
- establishment of parameters measurements accuracy correspondance to the requirements on technological processes optimum regimes provision;
- establishment of correctness of requirements to the selection of measuring means and procedures on their use;
- evaluation of measuring means capacity correspondance to technological equipment capacity.

As it has been stressed, quality characteristics constitute normative-technical documents but being developed on a concrete technological equipment at strict keeping to technological discipline. That is why the task of measurement and control on the stage of meat products manufacture is meaningful. Depending on technological parameters deviations, essential amino acids decomposition, denaturational and aggregational changes of proteins, proteins and polypeptides reactions with reducing compounds and fat oxidation may occur. The abovementioned changes effect amino acids composition of a product, protein's stability concerning food-digestible enzymes influence, structure-mechanical properties and organoleptical characteristics of a finished product /1/.

To reduce or exclude technological parameters effect on products quality, it is necessary to fulfill metrological support of production preparation. The metrological support of production preparation - is a complex of organization-technical measurements directed to determination, with a desired accuracy, of products, technological processes and equipment