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THEORETICAL AND PRACTICAL ISSUES OF STANDARD SPECIFICATIONS FOR MEAT AND MILK PRODUCTS

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Abstract

The necessity and expediency of enhancing national standards of the type of technical specifications that norm the safety and quality parameters of meat and dairy products, which is a promising area of technical regulation in Ukraine, are substantiated. It is noted that possible directions for improving national standards that regulate the technical specifications for meat and milk products are the development of new and revision of existing standards aimed at regulating the rheological properties of products, as well as the use of environmentally friendly biodegradable packaging materials. An important direction in enhancing technical regulation is the implementation in national standards of technical specifications for meat and dairy products used to solve issues of food security of the state, in particular, the products laid down for long-term storage or intended to solve food problems of the population during the periods of emergency.

Keywords: national standards, technical regulation, meat products, milk products, rheological parameters, biodegradable packaging, food security.

ЕТ-СҮТ ӨНІМДЕРІНІҢ СТАНДАРТТАРЫНДАҒЫ ТЕХНИКАЛЫҚ ЖАҒДАЙЛАРДЫҢ ТЕОРИЯЛЫҚ ЖӘНЕ ПРАКТИКАЛЫҚ АСПЕКТІЛЕРІ

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Аңдатпа

Украинадағы техникалық реттеудің перспективті бағыты болып табылатын ет және сүт өнімдерінің қауіпсіздігі мен сапа көрсеткіштерін реттейтін техникалық шарттар түріне ұлттық стандарттарды жетілдіру қажеттілігі мен мақсаттылығы дәлелденді. Ет және сүт өнімдерінің техникалық сипаттамаларын реттейтін ұлттық стандарттарды жетілдірудің ықтимал бағыттары өнімнің құрылымдық-механикалық қасиеттерін реттеуге бағытталған жаңа стандарттарды әзірлеу және қолданыстағы стандарттарды қайта қарау, сондай-ақ экологиялық таза биологиялық ыдырайтын өнімдерді пайдалану болып табылатыны атап өтілді. орау материалдары. Техникалық реттеуді жетілдірудің маңызды бағыты мемлекеттің азық-түлік қауіпсіздігін қамтамасыз ету мәселелерін шешу үшін пайдаланылатын, атап айтқанда, ұзақ мерзімді сақтауға белгіленген немесе азық-түлік өнімдерін тамақтандыру мәселелерін шешуге арналған ет және сүт өнімдеріне қойылатын техникалық талаптарды ұлттық стандарттарға енгізу болып табылады. төтенше жағдай кезеңіндегі халық.

Түйінді сөздер: ұлттық стандарттар, техникалық регламент, ет өнімдері, сүт өнімдері, құрылымдық-механикалық сипаттамалары, биологиялық ыдырайтын қаптамалар, тамақ өнімдерінің қауіпсіздігі.

ТЕОРЕТИЧЕСКИЕ И ПРАКТИЧЕСКИЕ АСПЕКТЫ ТЕХНИЧЕСКИХ УСЛОВИЙ В СТАНДАРТАХ НА МЯСНЫЕ И МОЛОЧНЫЕ ПРОДУКТЫ

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Аннотация

Обоснованы необходимость и целесообразность совершенствования национальных стандартов вида технических условий, нормирующих показатели безопасности и качества мясных и молочных продуктов, что является перспективным направлением технического регулирования в Украине. Отмечено, что возможными направлениями совершенствования национальных стандартов, нормирующих технические условия на мясные и молочные продукты, являются разработки новых и пересмотр действующих стандартов, направленные на нормативное регулирование структурно-механических показателей продуктов, а также использования экологически безопасных биоразлагаемых упаковочных материалов. Важным направлением совершенствования технического регулирования является воплощение в национальных стандартах технических требований к мясным и молочным продуктам, используемым для решения вопросов продовольственной безопасности государства, в частности закладываемых на длительное хранение либо предназначенных для решения проблем питания населения в периоды чрезвычайных ситуаций.

Ключевые слова: национальные стандарты, техническое регулирование, мясные продукты, молочные продукты, структурно-механические характеристики, биоразлагаемая упаковка, продовольственная безопасность.

Introduction

A collective activity aimed at establishing and implementing standards for defining the requirements that goods, products, services, procedures, etc. must meet, is called standardization, its principal purpose being solution of the conflicts that may arise during repetitive situations. Standardization covers the development, distribution and application norms, which may or may not be obligatory, and this is a dynamic and ongoing process, it requires clear rules and formulations that exist and must be mastered by specialists. According to the Law of Ukraine “On Standardization”, “standard” is a “normative document based on consensus, adopted by a recognized body, which establishes rules, instructions or characteristics of the activity or its results, and is aimed at achieving the optimal degree of ordering in a particular area”. Now days, standards, including the national standards of Ukraine DSTU, are voluntary – except for the cases where references to standards in existing regulatory legal acts make these standards mandatory for use. Standards that regulate general specifications and specifications for foods usually do not belong to the mentioned specific group of standards and, therefore, are voluntary [1-5]. The Ukrainian manufacturers and consumers continue to focus on the current regulatory documents, primarily on the national standards of Ukraine DSTU, which remain an important factor in the formation of the domestic food market [6].

Let us consider the essence of the terms “safety” and “quality” when applied to foods, in particular milk and meat products. Quality is the ability to meet the needs of consumers and meet certain requirements for physical, chemical and sensorial (taste, odor, etc.) parameters. Food safety is the most important, but by no means the only component of quality, which includes the above-mentioned objective and subjective characteristics of foods, as well as their cost. Thus, food safety is a narrow and well-defined concept that concerns the life and health of consumers. It is the food safety that the legislation of civilized countries deals with, and it is

it that the state guarantees to the citizens – with the exception of the quality of products for socially vulnerable groups (children, persons with special needs, etc.), which is also an issue for the state institutions. Such international standards as the standards of the European Union EN and the International Organization for Standardization ISO are mainly used to determine the safety parameters of food raw materials and finished food products, but the majority of the national standards DSTU dealing with foods standardize specifications and general specifications for the manufacture of food products. Conceptually different in comparison with the typical national standards DSTU, there are international standards CODEX STAN of the FAO/WHO Codex Alimentarius Commission. The said standards normalize the quality parameters of food products, they are recommendatory, and in terms of volume and content differ significantly from the DSTU standards, because they describe the characteristic features of the product itself, and not numerous details of the technological process of production itself and production control of food products [5].

As for today, rather a problematic issue in the standardization of dairy production is the proper coverage of methods for analyzing the physical and chemical parameters of milk and milk products by regulatory norms in force, but the issues of the normative regulation of numerous milk-containing products can be considered to have already been fulfilled. Other foods of the animal origin, meat products also play an important role in ensuring a healthy nutritious diet for consumers, in particular in supplying a complete protein component to this. The meat products belong to the strategically important ones, therefore, ensuring their high quality and proper safety are among the highest priority tasks of the modern food industry, and the national regulatory framework is a guarantee of the food security at all the levels, incl. the national one. It is a fact that domestic standardization does not yet fully comply with international standards [5, 7, 8]. Until recently, meat product manufacturers have been using numerous methods for determining quality parameters in accordance with the standards GOST of the former Soviet Union. As for today the majority of the said standards has been canceled, however, a full replacement of the mentioned methods with modern methods in accordance with international and European standards, unfortunately, has not taken place due to lack of funds to carry out such work [5].

Despite the above considerations, national standards norming the specifications for meat and dairy products are now familiar and acceptable to both manufacturers and consumers of these products. The abbreviation DSTU (National Standard of Ukraine) on the product packaging for many consumers is a kind of quality label and, in many respects, determines their conscious choice. Scientists and specialists in the food industry, while introducing and mastering international standards (ISO, EN, etc.), do not forget about the development and improvement of an array of national standards, including those regulating the technical specifications for meat and dairy products. In particular, we see the possibility of such improvement in supplementing the provisions of the standards with norms relating to the rheological properties of products, the possibility of using environmentally friendly, including biodegradable, packaging, as well as norms that reflect the technical and technological problems of long-term storage of meat and dairy products reserved for solution food security problems.

Results and discussion

There is a vast array of the national DSTU standards concerning milk and meat products the leading organization for developing and actualizing them being the Technical Committee for Standardization 140 “Milk, meat and products of their processing”, which is duly charged with coordinating and directly performing standardization work in the meat and dairy industry.

The standardization objects determined by the current Statutes of TC 140, in accordance with the current NC 004:2020 "National classifier of regulatory documents" [9], are shown in Figure 1 – concerning milk and milk products and Figure 2 – concerning meat and meat products. To assess food quality parameters, sensorial methods are usually used, the main and fundamental drawback of which is their subjectivity. Any scoring systems and questionnaires filled out even by experienced panelists will certainly reflect the tastes and preferences of these individuals, relevant life and professional experience, health status, moods and many other influences. By exposing processed food products to an external source of mechanical energy, we are able to monitor and quantify the rheological characteristics of these products, which in a certain way resist these external influences. Rheological properties are not only a fundamental factor influencing the quality of foods, as the degree of their acceptability for consumers in terms of uniformity, softness, crunchiness, juiciness, etc. for consumers, but are also important for the efficient and energy-saving implementation of most technological processes in the food industry. The rheological characteristics of food products depend on temperature, the geometric dimensions of the tested fragments, etc., therefore, the feasibility and possibility of adding these characteristics to the regulatory requirements for food quality requires careful study [6, 10].

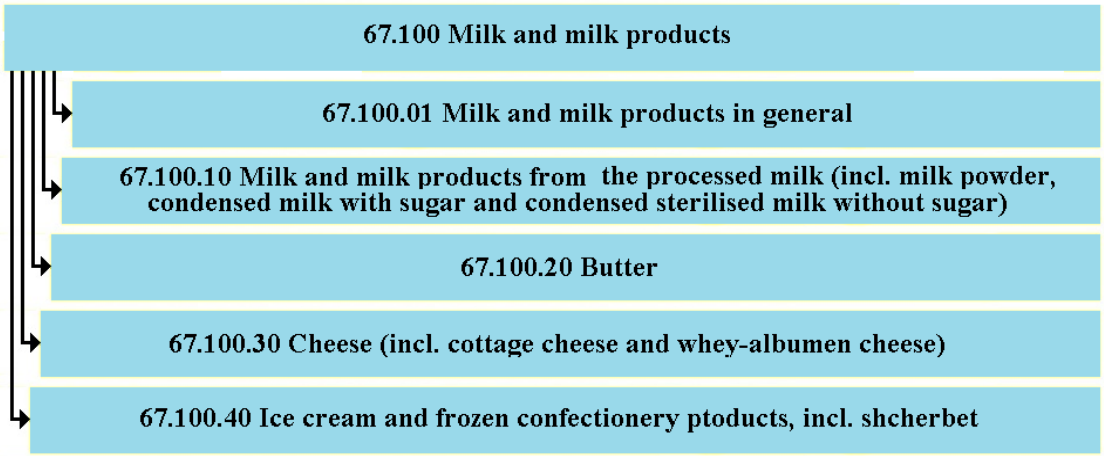

Figure 1. The standardization objects concerning milk and milk products in accordance with the National Classifier in force NC 004:2020 "Ukrainian classifier of normative documents" [9]

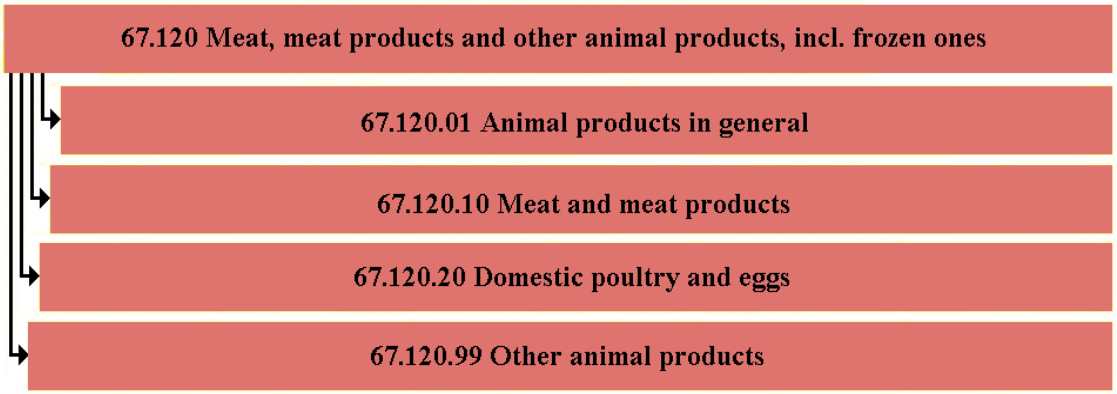

Figure 2. The standardization objects concerning meat and meat products in accordance with the National Classifier in force NC 004:2020 "Ukrainian classifier of normative documents" [9]

Since the food product is characterized by an internal structure formed from different chemical components that form certain microstructures and macrostructures held together by physical forces, and the structure of the product as a whole is an external expression of such structures [11, 12]. The overall structure is difficult to be defined precisely because its complex and multidimensional nature makes it impossible to evaluate a product by a single rheological parameter. Only the application of a number of objective methods based on different principles (for example, compression and displacement) and different measurement scales (for example, measurement of large and small deformations) allows full characterization of the structure of a food product [13]. The type of rheological properties of food products determine the consistency, which is a characteristic of their density or mobility. To determine the viscosity of liquid and quasi-liquid milk products (Table 1), a rotational viscometer Rheotest-2 was used [6].

Table 1. Rheological parameters of milk products [6]

Milk product	Fat content, % (by mass)	Viscosity abnormality $\eta_0 - \eta_m$, Pa·s	Dynamic yield limit, Pa
Cow milk	2.5	0.68	75
	3.2	0.83	83
Kefir	0.05	1.29	186
	1.0	0.63	120
	2.5	0.97	152
	3.2	1.51	195
Sour cream	15	1.43	198
	20	2.64	309
	30	3.05	448
Riazhanka (fermented baked milk)	2.5	1.36	195
	4.0	1.67	215

It follows from the obtained results that the nature of certain rheological characteristics of milk products gives grounds for asserting that they belong to structured systems, and the nature of the product, the technological features of manufacturing and the fat content in it affect the value of the dynamic yield strength, but the latter is not true for kefir, where such dependence was not observed. Consequently, the rheological parameters of the studied liquid and quasi-liquid milk products are too variable and depend on the nature of their flow and environmental parameters, so adding these characteristics to the number of normative ones is not possible [14].

Also, studies were carried out on the rheological characteristics of typical meat products and the possibility and expediency of attaching these characteristics to the regulatory requirements for the quality of these products were assessed. Studies of the rheological characteristics of meat products were carried out using a CMT2503 universal electromechanical testing machine (Shenzhen SANS Testing Machine Co., PRC). The shear stress tests were performed in accordance with the technique used, in particular, in [14]. The determination of the standard penetration stress was carried out with the involvement of theoretical concepts and practical settings, highlighted, in particular, in [15]. The rheological characteristics of meat products were also determined using the TPA (Texture Profile Analysis) method proposed by Born [16]. Practical aspects of determining the rheological characteristics by the TPA method,

as well as the reasons for the selection of indicators are given in [14,17]. The research results are presented in Table 2.

Table 2. Rheological parameters of meat products

Product	Standard penetration stress, Па	Shear stress, kPa	TPA Parameters			
			Hardness, N	Cohesiveness	Springiness	Chewiness, N
Moskovska Sausage DSTU 4591:2006	79.0	218.9	397	0.40	0.65	112
Servelat Sausage DSTU 4591:2006	68.3	189.3	305	0.44	0.54	91
Drohobytska Sausage DSTU 4432:2005	89.4	228.4	457	0.37	0.76	119
Prima Sausage DSTU 4432:2005	70.2	187.5	309	0.29	0.54	78
Ukrainska Sausage (grade 1) DSTU 4434:2004	39.3	191.3	232	0.43	0.64	51
Poltavska Sausage DSTU 4434:2004	34.8	188.5	241	0.41	0.63	54
Kyivskyi Roll DSTU 4430:2005	69.3	201.0	336	0,51	0.76	112
Stolovyi Roll DSTU 4430:2005	82.7	208.7	358	0.44	0.72	124
Ukrainska Sausage (Higher grade) DSTU 4433:2005	53.8	179.6	314	0.31	0.59	72
Likarska DSTU 4436:2006	27.3	139.2	143	0.43	0.56	42
Krasnodarska Sausage DSTU 4436:2006	31.7	144.5	161	0.35	0.62	44
Chaina Sausage DSTU 4436:2006	29.7	140.8	145	0.31	0,50	40
Osoblyvi Frankfurters DSTU 4436:2006	27.9	136.4	125	0,40	0.66	35
Yalovychi Frankfurters DSTU 4436:2006	35.5	144.2	137	0.43	0.58	61
Skewers DSTU 4436:2006	30,1	149.8	311	0.35	0.59	69
Ham of beef with lard smoked and cooked DSTU 4670:2006	93.6	217.6	473	0.38	0.79	122
Roll of beef and pork smoked and cooked DSTU 4670:2006	84.3	188.1	388	0.30	0.68	113

Standard penetration stress, shear stress, and TPA parameters such as hardness, cohesion and chewiness mainly depend on the type of meat products, their structure (whole muscle,

ground or comminuted), and within a certain type of the said products – on the species composition raw meat, fat content, and moisture content. In a certain way, the general trend was contradicted by the numerical values obtained as a result of research of such a TPA parameter as elasticity, since the above factors did not have a systematic effect on it – a likely reason may be the use by manufacturers of structure stabilizers that give meat products their properties.

The data obtained confirm the thesis that it is possible to involve rheological parameters in the number of regulatory requirements for quality indicators of meat products, however, it is advisable to carry out this for a certain type of meat product within the framework of standardized specifications, but it is impossible to normalize the rheological characteristics of meat products within the framework of general technical conditions.

A global problem is the overall increase in the number of packages which leads to an increase in anthropogenic pressure on the environment as the majority of them is made from non-biodegradable polymers. So it is an urgent task to replace, at least partially, the currently used packaging materials with edible packaging coatings and bioplastics. These are biodegradable materials, compostable, or those produced on the basis of renewable natural resources. Until now it has not been possible to develop packaging methods using environmentally friendly materials that have found application in food enterprises because of inadequate sustainability and the high cost of such packaging [18]. Such biodegradable packaging materials as wax, paper, natural fabrics etc. are traditional for the food industry. But bioplastics, with the exception of some edible (food) coatings, have been involved in food manufacturing practices relatively recently. Biodegradable packaging materials used in industry are classified into the following three groups [19, 20]:

1) plant polymers used alone or in a mixture with biodegradable synthetic polymers;

2) microbial polymers obtained by fermentation of agricultural raw materials used as a substrate. Among these polymers, polyhydroxyalkanoates or PHA are also distinguished, the most well known of which is PHBV (polyhydroxybutyrate-c-valerate);

3) monomers or oligomers, polymerized by conventional chemical processes and obtained by fermentation of agricultural raw materials used as a substrate. Among the materials in this category, the most well known one is polylactide (PLA).

In the classification proposed in [21], in the three above classes, the fourth is also added:

4) products obtained by synthesis from petrochemical raw materials. These are several polymers or subgroups: polycaprolactone (PCL) polyetheramides (PEA) aliphatic copolyester such as polybutylene succinate adipate (PBSA) aromatic copolyester such as polybutylene adipate coterephthalate (PBAT).

Biodegradable polymers PCL and PLA are the most widespread on the market, second only to starch derivatives [22]. The performed analysis of scientific and technical information confirms the possibility and feasibility of using biodegradable materials, in particular bioplastics as innovative packaging materials for use in the food industry. These materials, primarily PLA, do not differ significantly, in terms of mechanical and other technological properties, from traditional plastics from hydrocarbons. The biodegradable polymers, as well as the raw materials used for their manufacture, are shown in Figure 3.

As for today the normative documents of Ukraine, which in detail regulate specifications or general specifications conditions for the food products, in particular their packaging, do not contain norms that would establish the rules of ecological packaging (materials, technologies, etc.). The researchers and specialists of the Institute of Food Resources of the NAAS performed a series of works, the results of which made it possible to draw up practical recommendations

for modifying regulatory documents of various levels, namely, adding rules and requirements for biological packaging.

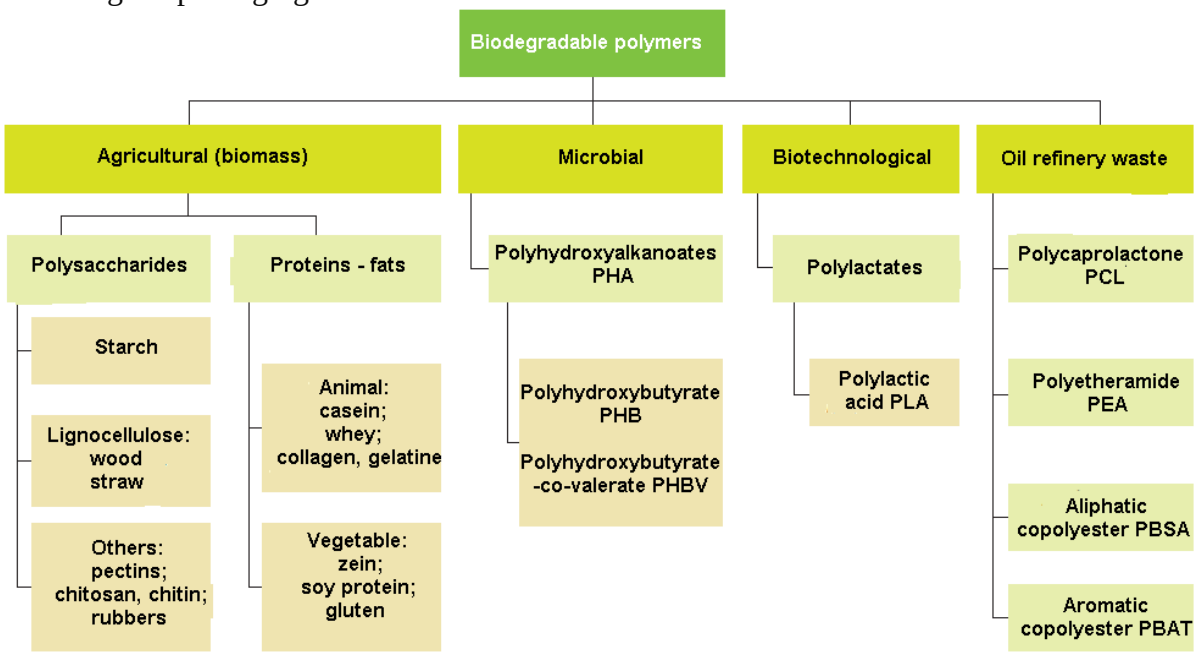

Figure 3. Nomenclature of biodegradable polymers – adopted from [18, 21, 22].

In particular, such recommendations have been formulated regarding the packaging of meat and milk products [18]. It is advisable to modify national standards in order to implement the requirements of ecological packaging of the said products by developing amendments to national standards, or reviewing national standards in the manner specified by DSTU 1.2:2015 “National Standardization. Rules of works on national standardization” [23]. Specific requirements for the presentation and modification of regulatory texts are established by the fundamental national standard DSTU 1.5:2015 “National Standardization. Rules of development, formulation and presentation of national normative documents” [24], therefore, it is necessary to consistently comply with the requirements and guidelines on the content and form of the regulatory document to which the amendment is being developed, or which is being revised. It can be recommended to amend the regulations of these standards:

– the component “Terms and definitions” should, if necessary, be supplemented with terms and definitions of concepts in order to modify the national standard in the sense of adding to it the requirements for ecological packaging of food products:

x.1 ecological packaging

– packaging food products in a manner that makes it impossible or at least minimizes the harmful effects of the packaging used and the materials used for packaging on the environment, in particular from the disposal and / or destruction of used packaging.

x.2 ecological packages

– products and materials used for food packaging that meet the conditions of ecological packaging.

x.3 degradation

– variations in initial properties due to chemical decomposition of macromolecules that form a polymer element, regardless of the decomposition mechanism.

x.4 biodegradation

– changing the initial properties of a polymer element using a cell-mediated phenomenon.

x.5 biodegradable packages

– materials that are fully biodegradable or packaging products made from such materials.

x.6 food (edible) coating

– a layer of edible material applied to the surface of a food product for technological purposes that can be consumed with the processed product.

Other terms and definitions may be given in accordance with the objectives and content of the standards, and are to be modified. The component **"Requirements / provisions for the object of standardization"**, in the sense of compliance with the requirements of ecological packaging, should be supplemented with requirements and provisions for: the specific nomenclature of food products that can / should be packed using ecological packaging; physicochemical, structural and mechanical and other relevant parameters of food products, which are subject to the standards for environmental packaging; terms, temperature and humidity and other relevant parameters of storage of food products, packaged with the use of ecological packaging; conditions for the transportation and sale of food products packed with the use of ecological packaging; other relevant parameters.

The above requirements, in addition to the structural element **"Requirements / provisions for the object of standardization"**, are also noted in the structural elements **"Packaging"**, **"Transportation and storage rules"**, **"Control methods"** and **"Rules of acceptance"**.

The structural element **"Packaging"** shall be supplemented with provisions on the procedure for packaging a food product using ecological packaging and contain the following norms: a nomenclature of possible ways of ecological packaging; the range of materials and packaging products used for ecological packaging; technical and technological requirements for the process of ecological packaging; other relevant parameters.

Another important problem is a proper implementation of the norms which makes proper implementing of food security issues in the standards for foods possible, incl. meat and milk products. According to the Declaration of the Food and Agriculture Organization of the United Nations (FAO), food security is ensured when all people at any time have physical and economic access to safe and wholesome food sufficient to satisfy their physiological needs and benefits necessary for an active and healthy lifestyle [25]. There is a definition of food security as constant availability of food in quantities sufficient for active healthy lifestyle of the entire population – this means free access to healthy food of appropriate nutritional value; guaranteed opportunity to get food without involving food supply channels provided for in case of emergencies and disasters, without any consumption of food waste, theft of food, etc. [26]. According to [27], there are three principal components of food security: availability as the degree of actual or potential affordability of food in a certain group of the population during a certain period; accessibility, as the degree of the population's ability to receive food at its disposal during a certain period of time; consumption, as the ability of the population to provide enough nutritious food for a certain period of time. Consequently, the concept of food security, along with economic aspects, incorporates a number of technical components, such as: alimentary and nutritional value of food, other physical and chemical characteristics, suitability for transportation and short-term and long-term storage.

Here are considerations on the development of a specialized national regulatory document to address food security requirements. In accordance with the norms of [24], the title of the

standard is formed according to two component scheme: the structural element of the main part **"Title"** must be made up of the main component, which distinguishes a specific food product or a technologically due group of food products, and an additional component that properly discloses a special purpose developed standard that is: **"Specifications of use for ensuring the food security of the country"**, **"General specifications of use for ensuring food security of the state"** or, in technically and normatively reasonable cases, **"Specifications of state reservation"**, **"General specifications of state reservations"**, etc. In the structural element of the main part **"Scope of application"**, it should be noted that its scope are the specifications of the use for ensuring food security of the country, the general specifications of use the use for ensuring food security of the state, in technically and normatively justified cases, the specifications of state reserving, the general specifications of state reserving or other, more specific rules in the framework of solving the food security issues. In the section **"Terms and definitions"** following positions shall apply:

– the concept of "food security" with the definition as "socio-economic and environmental situation in which all social and demographic groups of the population are stably provided with safe and high-quality food in the required quantity and assortment necessary and sufficient for physical and social development of a person, ensuring health, etc.";

– the concept of "food security of the state" with the definition as "socio-economic and ecological situation of Ukraine, in which all social and demographic groups of its population are stably provided with safe and high-quality food in the required quantity and assortment necessary and sufficient for the physical and social development of a person, ensuring health, etc. ";

– the concept of "state reservation of foods" with the definition as "creating stocks of raw materials and food resources to ensure the strategic needs of the state, to carry out priority work in the aftermath of emergency situations and to perform other activities provided for by the legislation";

– the concept of "strategic needs of the state for food" with the definition as "the needs of the state for stocks of food resources necessary to ensure the national security of the state, stabilize its economy and carry out priority work in the aftermath of emergency situations".

The above terms and definitions can be supplemented by other terms and definitions in accordance with the objectives and content of the standards being developed.

According to the norms of [24] the structural element of the standard **"Requirements / Provisions for the object of standardization"** lays out the essential part of the standard (rules, regulations, requirements, methods, etc.). A specialized standard for attracting food security requirements should contain: the nomenclature of food products to which the norms of the standard apply; the full list of physical and chemical, rheological and other relevant parameters of food raw materials and food products to which the norms of the standard apply; specific information on the timing, temperature and humidity, and other relevant storage parameters for food raw materials and food products brought in to fulfill food security objectives; machines and appliances for the packaging and transportation of food raw materials and food products brought in to fulfill the tasks of ensuring food security; guidelines for laying in, selling, issuing and refreshing stocks of food raw materials and food products after the end of the regulatory period of the state reservation; requirements to be specified in accordance with the object of standardization. The above requirements shall form the content of the structural element **"Requirements / provisions for the object of standardization"**, as well as the structural elements **"Labelling"**, **"Packaging"**, **"Rules of transportation and storage"**, **"Methods of control"** and **"Rules of acceptance"**.

To modify food standards to take food security issues into account, in accordance with [23], amendments shall be developed to the said standards enhancing the **"Scope of application"** component with the following sub-clause: **"State reservation requirements are set forth in [numbers of components]"**. The obligatory component **"Terms and Definitions"** can be amended with pairs of terms and definitions: "food security", "food security of the state", "state food reservations", "strategic needs of the state for food", etc. supplemented with the normative text "Depending on the purpose [the names of food products] are divided into those intended for direct market turnover and are intended for state reservation."

When a standard in force is modified, the component **"Requirements / Regulations for the Standardization Object"** shall be amended with requirements and provisions similar to those given above with respect to specialized national regulatory documents, the purpose of which is to take into account food security requirements. Also, these requirements, in addition to the structural element **"Requirements / Provisions for the object of standardization"**, are added to the structural elements **"Labelling"**, **"Packaging"**, **"Rules for transportation and storage"**, **"Methods of control"** and **"Rules of acceptance"**. The structural element **"Labelling"** shall be amended with the entry "Food product intended for state reservations, shall be labelled "Suitable for state reservations". The order and requirements of the packaging of food products intended for state reserving should be provided for in the **"Packaging"** structural element, and appropriate and packages and packaging materials should be specified. If it is necessary to use additional methods of control of food products intended for state reservation, the standard structural element of the same name is supplemented accordingly. In the structural element **"Rules of acceptance"** in relation to food products intended for state reservation special norms shall be added, these based on the specifics of the said products [26,28].

The concept of food security has still been an issue important globally and all the efforts shall be taken to solve the said issue [29]. The analysis of the problem of mutual consideration of technical regulation and food security to have been made proves the possibility and expediency of involving food security issues in technical regulation regarding food raw materials and food products, formulating recommendations for practical consideration of food security requirements in normative documents of different level: national standards, other standards, specifications. It is advisable to implement this accounting by modifying existing normative documents and developing the new ones. Practical ways to implement the principles of food security in technical regulation by developing the "Guideline for presentation of food security issues in the regulatory documents of different levels that define the requirements for food products" are shown.

Conclusion

The accumulated scientific and technical information as well the conducted studies give grounds to assert that the standards of the type of technical conditions that regulate the safety and quality parameters of meat and milk products remain in demand both by producers and consumers. Therefore, work to improve these standards is a promising area of the national technical regulation. Possible directions for improving national standards that regulate the specifications for meat and dairy products are the development of new and revision of existing standards aimed at regulating the rheological properties of products, as well as the use of environmentally friendly biodegradable packaging materials. A very important area is the embodiment of technical specifications for meat and dairy products used to address issues of food security of the state into regulatory norms. These are the products laid down for long-term

storage or intended to solve problems of nutrition of the population during periods of emergency.

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