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LEGISLATIVE BASE COMPARATIVE ANALYSIS OF THE FOOD ADDITIVES USE IN UKRAINE AND THE EUROPEAN UNION

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Анотація. У статті наведено аналіз процесу гармонізації українського законодавства з європейським щодо використання харчових добавок. Представлено основні нормативні документи України та міжнародні стандарти, які регулюють використання добавок у виробництві продуктів харчування. Охарактеризовано проблеми переходу до норм ЄС та труднощі імплементації Регламенту ЄС 1333/2008. Відзначено, що відповідно до чинного законодавства України, визначення «харчових добавок» різні. Крім того, існуючі українські норми і правила для харчових добавок відрізняються від міжнародних актів, таких, як Кодекс стандартів Аліментаріус (Codex Alimentarius) і численних директив ЄС. У законодавчих нормах України немає поняття «заборонена добавка» і не передбачена відповідальність за її використання, отже, ці добавки можуть використовуватись без обмежень. Список добавок, дозволених до застосування в харчовій промисловості у країнах ЄС з року в рік змінюється. Деякі добавки вважаються небезпечними для здоров'я людини, і їх застосування заборонено. Таким чином, відповідно до сьогоденних вимог ЄС необхідно провести процес гармонізації українських санітарних норм і правил з рекомендаціями Комітету Кодексу Аліментаріус з харчових добавок в харчовій промисловості.

Ключові слова: харчові добавки, безпека, регламентація, нормативні документи, міжнародні вимоги.

Анотация. В статье приведен анализ процесса гармонизации украинского законодательства с европейским по использованию пищевых добавок. Представлены основные нормативные документы Украины и международные стандарты, регулирующие использование добавок в производстве продуктов питания. Охарактеризованы проблемы перехода к нормам ЕС и трудности имплементации Регламента ЕС 1333/2008. Отмечено, что в соответствии с действующим законодательством Украины, определения «пищевых добавок» различны. Кроме того, существующие украинские нормы и правила по использованию пищевых добавок отличаются от международных актов, таких, как Кодекс стандартов Алиментаріус (Codex Alimentarius) и многочисленных директив ЕС. В законодательных нормах Украины нет понятия «запрещенная добавка» и не предусмотрена ответственность за ее использование и, следовательно, эти добавки могут использоваться повсеместно. Список добавок, разрешенных к применению в пищевой промышленности в странах ЕС из года в год меняется. Некоторые добавки считаются опасными для здоровья человека, и их применение запрещено. Таким образом, в соответствии с сегодняшними требованиями ЕС необходимо провести процесс гармонизации украинских санитарных норм и правил с рекомендациями Комитета Кодекса Алиментаріус по пищевым добавкам в пищевой промышленности.

Ключевые слова: пищевые добавки, безопасность, гармонизация, нормативные документы, международные требования.

Introduction

Current state and prospects of using biotechnology techniques aimed at creating a safe and environmentally friendly food is a priority in the food [1].

The experts of Physiology and Food biochemistry position encourage the food industry to review the requirements to the newly created Food and methods for their preparation. In this regard, the food industry developments at the present stage should focus primarily on maximum customer satisfaction, the creation of high quality, environmentally friendly, medically and biologically safe products.

The problem statement

One of the new food production priorities is unavoidable use of wide food additives range, which

are represented in the world market in different price categories. Today's economic realities are pushing manufacturers to use multifunctional synthetic food additives of doubtful quality [2].

According to the current Ukraine legislation, the definitions of «food additives» are different. According to the sanitary rules and regulations on the use of food additives approved by the Ukrainian Ministry of Health, № 222 from 23.07.96, food additives – natural or synthetic substances that are specifically introduced into the food products in order to give them the required properties (organoleptic, technological) and can't be used independently as a conventional food or food components. Additives may remain in food in their natural unchangeable form or be in the form of substances which were formed after the chemical interaction between them and food components. In the Ukraine Law «About the

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safety and quality of food», food additive – any substance that is not usually considered a food or part of it, but added to the food product from a technological purpose in the production process, and which as a result has become an integral part of the product (definition excludes pollutants, pesticides, or substances added to food to improve their nutritional properties) [3].

Legislative base comparative analyses in Ukraine and the EU

Today in Ukraine there are following regulations on the food additives use:

1. The Ukraine Law «About the safety and quality of food products». According to Article 30 of this Law the use of food additives in food production and in food products that are traded permitted after registration by central executive body in health care. Nutritional supplements are in the relevant register by the request of the manufacturer and/ or seller (supplier) or on the recommendation of the National Commission of Ukraine Codex Alimentarius on the base of approved sanitary-epidemiological norms regarding the level of food additives inclusion in certain foodstuffs and the conclusion of the state sanitary and epidemiological assessment signed by chief sanitary doctor of Ukraine. A food additive permitted to handling in Ukraine if: it is substantiated by technological need and that purpose can not be achieved by other technological available means; it is not a danger to the consumer health at the use level, which is proposed and that can be set on the basis of available scientific evidence; food additive not mislead an user. The procedure for food additives registration is established by the central executive body in health care.

2. Law of Ukraine «About Ratification of the Protocol on Ukraine's accession to the World Trade Organization» from April 10, 2008 250-VI. According to the Constitution of Ukraine and the Law «About international contracts of Ukraine» this document is part of the national legislation of Ukraine. Protocol about Ukraine's accession to the WTO Agreement and the use of sanitary and phytosanitary measures determined that all members of the organization base their SPS measures on international standards.

3. Sanitary rules and regulations on the use of food additives, approved by Order of the Ukraine Health Ministry № 222 23.03.1996. A special part of the rules, Annex 2 «List of products that cannot be colored» Annex 1 (list of permitted food additives, their fields and maximum allowable level) of these rules was canceled (№ 218 from 23.07.1998).

4. «Medical and biological requirements and sanitary quality norms of food raw materials and products» № 5061-89 (Part IV Section 4.B «hygiene normative for food additives in products»). In this

document for some food additives scope handling and the maximum allowable levels of a food are listed (dyes, antioxidants, etc.).

5. Resolution of the Ukraine Ministers Cabinet «list of food additives approved for use in food»: № 12 from 01.04.1999, № 342 from 17.02.2000; № 1140 from 07.21.2000; № 1656 from 08.11.2000 p; № 674 from 21.06.2001; № 143 from 11.02.2004. From 1999 to 2005 «list of food additives allowed for use in food» was approved by Decree of the Ukraine Ministers Cabinet. These were shown only the list of food additives, without specifying the scope of their use.

6. Resolution of Ukraine Chief State Sanitary Doctor «About hygiene approval values of food additives content». Resolutions of the Ukraine Chief State Sanitary Doctor approved the first field of each permitted food additive handling and its maximum allowable levels in food productivity. For those additives which are is resolution from 01.04.1999 № 12, chief sanitary doctor of Ukraine is not defined their use scope.

The legislation lies very profitable for manufacturers: a closer look reveals that in Ukraine there is no concept of «prohibited additive» and these is no responsibility for its use, and therefore, these types of additives are used everywhere.

Moreover, in Ukraine there is no maximum allowable concentration norm of the additive per product kilogram, and in practice it turns out that almost completely harmless additive contained in the product in huge doses, which is clearly have not a positive impact on the customer health. And finally, the most important: British scientists have recently discovered that part of the authorized in Ukraine additives is still harmful to human health, especially children. Some cause fatigue, poor sleep, lethargy, apathy, but it is believed that if this or that additive is already in a «allowed list» and «is permitted» in Ukraine normative documents, then only a wonder can expel it from there.

The State Agency of the UK Food Standards (FSA) analyzed recent studies conducted by the University of Southampton, encourages producers to abandon the use of some colorings.

In the University of Southampton press-release says that a recent study prove that ingestion of foods containing a number of synthetic colorings leads to increased children hyperactivity.

The studies were held with the use of following colorings: E102, E104, E110, E122, E124, E129, allowed in our country. In foods containing colorings sodium benzoate was presented (a food additive E211), but scientists do not bind increase hyperactivity with its action.

Half of the children every day for six weeks were given drinks containing food colorings and sodium benzoate. Another group of children were drinking fruit juices.

Children that were consuming drinks with colorings had the significantly increased hyperactivity level. They were more mobile, impulsive and inattentive. This study repeated and expanded the previous similar study, commissioned by FSA. The research team used their own observations and reports of teachers and parents. Neither the teachers nor the parents did not know to which group child belongs and what kind of drink were offered.

In Europe, attention to the use of E-additives started to pay back in the 50s. At that time the first table of hazardous substances and their detailed descriptions were given. Of course, its impossible to say that all the products in the European Union now deprived of these additives, but people already pay much more attentive to what they buy and eat every day. Moreover, being unclaimed in Europe, these additives (and products containing them) safely ferried to our country and do not meet any prohibitions and obstacles on its path. And no matter how Ukrainian journalists and individual customers complaints that additives seriously reduce immunity, promote the development of malignant tumors, the disturbances have not yet listened by people in law.

According to the World Health Organization (WHO), the Food Additives – natural compounds and chemically synthesized substance (analogs) that are usually not eaten, but in small amounts are used in the food industry. They are used to give to particular product specific properties, such as flavor and pomp, and to preserve the appearance and taste for a long time.

General Standard for Food Additives STANDARD CODEX 192-1995, Rev 7-2006 provides the following definition of food additives: food additive- is any substance that is not usually used in the food itself, and is not used as a regular ingredient of the product, regardless of whether it has nutritive value and is intentionally added to the food product for technological aims (including improved organoleptic properties) during manufacture, processing, preparing, treating, packaging, transportation or storage and is directly or indirectly causes or may reasonably be expected to lead to the fact that this additive becomes a component of food or otherwise affecting on product. This term does not include undesired substances or impurities, which are added to a food product for maintaining or improving its nutritional value [4].

In contrast to our legislation, European regulations provide a clear use of food additives: The use of food additives is justified only when their use brings benefits, no significant threat to the health of consumers, do not mislead consumers, and performs one or more technological functions, that is in Codex and needs (saving nutritional value of the product, targeted reduction of the nutritional value of the product, if the product is a significant part of the

normal diet; ensuring the necessary ingredients of foods that are made for certain categories of consumers with nutritional problems; increasing the degree of quality preservation or stability products or improving their organoleptic properties, that this does not alter the character or product quality nature and that the consumer will not be fooled; facilitating the production, processing, preparing, processing, packaging, transportation or storage of the food product with the proviso that the additive does not apply to conceal poor quality of raw materials or unsanitary), and provided that these needs can not be met by other economically and technologically reasonable methods [5].

European food producers are working in accordance to the basic documents of the Codex Alimentarius, which regulate the food additives amount in foods, scope, control methods. EU regulatory documents governing the food additives use are listed below:

1. Codex general standard for food additives CODEX STAN 192-1995.
2. Guidelines for simple evaluation of food additive intake CAC / GL 03-1989.
3. General methods of analysis for food additives CODEX STAN 239-2003.
4. List of codex specifications for food additives CAC / MISC6.
5. Codex class names and the international numbering system for food additives CAC / GL 39-1989.
6. General standard for the labelling of food additives when sold as such CODEX STAN 107-1981.
7. Guidelines for the use of flavourings CAC / GL 66-2008.
8. REGULATION (EC) No 1331/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 establishing a common authorisation procedure for food additives, food enzymes and food flavourings.
9. REGULATION (EC) No 1332/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on food enzymes and amending Council Directive 83/417/EEC, Council Regulation (EC) No 1493/1999, Directive 2000/13/EC, Council Directive 2001/112/EC and Regulation (EC) No 258/97.
10. REGULATION (EC) No 1333/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on food additives.
11. REGULATION (EC) No 1334/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on flavourings and certain food ingredients with flavouring properties for use in and on foods and amending Council Regulation (EEC) No 1601/91, Regulations (EC) No 2232/96 and (EC) No 110/2008 and Directive 2000/13/EC.

Table 1 – Traditional food for which certain country-members may continue to prohibit the use of certain food additives

Country-members	Food products	Prohibited food additives
Germany	Traditional germane bier (Bier nach deutschem Reinheitsgebot gebraut)	All
France	Traditional French bread	All
France	Traditional French canned truffle	All
France	Traditional French canned snail	All
France	Traditional French cans from goose and duck	All
Austria	Traditional Austrian Bergkase	All except preservatives
Finland	Traditional finland Mammi	All except preservatives
Sweden, Finland	Traditional fruit syrups	Dyes
Denmark	Traditional Kadboller	Dyes and preservatives
Denmark	Traditional Leverpostej	Dyes and preservatives
Italy	Traditional Lomo embuchado	All except preservatives and antioxidants
Italy	Traditional Mortadella	All except preservatives, antioxidants, pH-regulating agents, flavor enhancers, packaging gas
Italy	Traditional Cotechino e zampone	All except preservatives, antioxidants, pH-regulating agents, flavor enhancers, packaging gas

List of additives which are permitted in the food industry changes from year to year. Some additives are deemed hazardous to human health, and their application is prohibited. For example, the reason for the European Commission prohibition of coloring E128 Red 2G (Red 2G) using, which was allowed in the production of sausages and meat products, were the results of research carried out by the European Food Standards Agency (EFSA). In Ukraine, due to adverse effects on the human body it is prohibited to use following additives for food purposes: E121 Citrus Red 2, Amaranth E123, E240 Formaldehyde, E924a potassium bromated, bromate calcium E924b, E173 aluminum powder [6,7].

In table 1 there is a lists of traditional food products for which certain country-members may continue to prohibit the use of certain food additives categories. Ukraine can complete the list of their traditional food, which prohibit the use of certain food additives.

In EC regulation 1333/2008 there is a foods list, which is not allowed the food additive or dye presence due to the principle of the transfer (table 2). In accordance with the principle of transferring the presence of a food additive may be authorized as part of multycomponent food, if its presence allowed in one of the ingredients of the food composition.

Table 2 – Food products in which which the presence of food additives prohibit due to the transfer principle

1	Raw foods
2	Honey
3	Nonemulsion oils and fats of animal and plant origin
4	Butter
5	Pasteurized and sterilized milk without flavorings (including ultra-pasteurized milk) and pasteurized cream without the use of flavorings (except cream with low fat)
6	Fermented dairy products without heat treatment after fermentation
7	Oiler without flavoring (excluding sterilized)
8	Natural mineral water, spring water or other bottled water for drinking
9	Coffee (excluding soluble coffee using flavors) and coffee extracts
10	Leaf tea without flavorings
11	Sugars
12	Dry pasta, except pasta without gluten content

Conclusions

Existing Ukrainian rules and regulations for food additives differ from international acts such as Codex standards Alamentarius (Codex Alimentarius) and numerous EU Directives: on the whole they are more stringent. And this creates significant barriers for

producers and importers and domestic manufacturers. In other words, there is a situation where health standards in Ukraine in terms of the food additives use are not aligned with the Codex Alimentarius, it creates less favorable conditions for domestic producers as compared with producers in countries where they exported, and importers [8]. Now, in the light of European integration processes, which take place in Ukraine, such substantial differences in sanitary standards can be classified as sanitary barriers in a view of the Uruguay Multilateral Agreements on Trade Goods in of the GATT 1994. In accordance with Article 3 «Agreement of the Sanitary and Phytosanitary norm application», the country sanitary norms application that differs from the international

standards and regulations should be scientifically confirmed. With the current financial and economic situation in Ukraine it is important to find fund for research work. In accordance with Annex A of the Agreement, international standards in the field of food additives are established by the Codex Alimentarius. If the country has more stringent requirements compared with the Codex Alimentarius standards it can only be applied to domestic products [9].

Therefore, in accordance with the today's EU requirements it is necessary to make urgent harmonization of Ukrainian sanitary norms and rules with the recommendations of the Codex Alimentarius Committee on Food Additives in the food industry.

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ОБГРУНТУВАННЯ СКЛАДУ ЗАКВАШУВАЛЬНОЇ КОМПОЗИЦІЇ ДЛЯ ВИРОБНИЦТВА ЙОГУРТУ ФУНКЦІОНАЛЬНОГО ПРИЗНАЧЕННЯ

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Анотація. На основі аналізу ринку продуктів функціонального призначення в Україні в роботі показано перспективи розробки нових видів йогуртів з підвищеними функціональними властивостями з використанням у складі заквашувальних композицій консорціумів лакто- та біфідобактерій. Обґрунтовано вибір бакконцентратів лактобактерій («GoodFood») та пробіотичних культур *B. longum* і *E. faecium* («Biform») безпосереднього внесення для розробки заквашувальної композиції для виробництва йогуртів функціонального призначення. Досліджено органолептичні, фізико-хімічні й мікробіологічні показники згустків, отриманих ферментацією молочних сумішей бакконцентратами «GoodFood» і «Biform», показано перспективність комбінування лакто- й біфідобактерій, які входять до складу зазначених бакконцентратів, у заквашувальних композиціях для виробництва йогуртів функціонального призначення, а також необхідність збагачення молочних сумішей фруктозою як біфідогенним фактором.

Обґрунтовано склад заквашувальної композиції для виробництва йогуртів функціонального призначення, яка містить консорціум культур *Streptococcus salivarius subsp. thermophilus*, *Lactobacillus delbrueski subsp. bulgaricus*, *Lactobacillus acidophilus*, *Enterococcus faecium* та *Bifidobacterium longum* у співвідношенні 1:1:1:1:1 при вихідній концентрації всіх культур у молочних сумішах 1·10⁶ КУО/см³. Визначено органолептичні, фізико-хімічні та