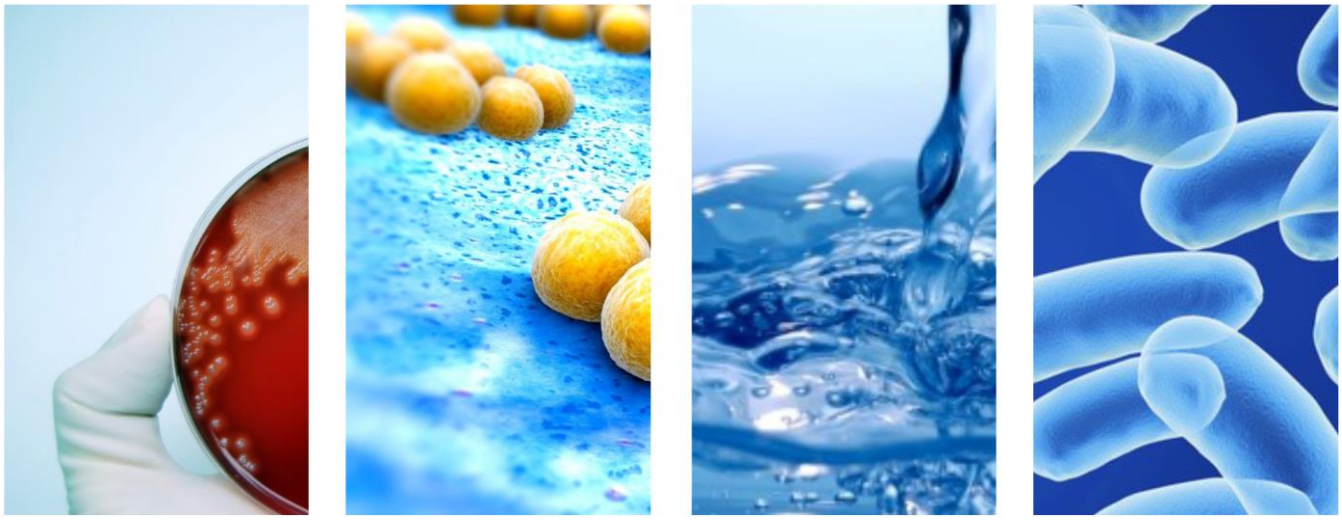
HAMILTON

NEWSLETTER

04/2017 (No. 30) December 2017



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Truth about dietary supplements revealed by a microbiologist. Part II: Microflora of animal raw materials, fish oil

By Małgorzata Stachowiak

1. Introduction

Recently, dietary supplementation with oils rich in omega-3 acids is widely recommended as an alternative to the fish diet. Oil supplements derived from marine organisms in the form of capsules are available without a prescription in the USA, Canada and European countries, and contain mainly fish (e.g. cod or halibut) liver oils.

We already know almost everything about the valuable health properties of marine fish livers and the oil extracted from them, but still when we think of fish oil, we imagine the same huge bottle that haunted generations of people forced to drink the liquid, whose specific taste and smell definitively differed from the currently available fish oil, every day. The method of obtaining fish oil, strict regulations and supervision over fish farms, which makes us believe that we get fish oil of the highest quality, contributed to the improvement of the organoleptic qualities of fish oil. Fish oil refers only to liquid cod liver oil or oil derived from other species of cod fish.

Scandinavian countries, i.e. Norway, Sweden and Island, are the motherland of fish oil. Initially, fish oil was used in leather tanning, as fuel for oil lamps, and even as a wood preservative. Over the years, its health benefits were also valued, and it was noticed that eating raw fish livers severely reduced the frequency of colds. Ingredients contained in fish oil are extremely important during the growth period of children and adolescents; therefore, as early as at the end of 18th century, fish oil was administered to children in order to prevent and treat rickets and other deficiencies of vitamin D.

One of the promoters of cod liver oil was Norwegian pharmacist Peter Möller. In 1854, he founded the first factory, in which he applied a patented technology for obtaining oil using steam, which improved the taste qualities of fish oil. In 1920, the most important components of fish oil, namely vitamins E, A, D, and omega-3 acids, were discovered and extracted. It turned out that cod liver oil improves the body's immunity, positively affects the condition of the skin and mucous membranes, enables the proper development of teeth, strengthens the skeletal and muscular systems, improves the eye health, and enables the proper operation of the peripheral and central nervous systems. Cod liver oil contains an extremely beneficial composition of fatty acids and is a good source of fat-soluble vitamins A and D3.

2. Microbiological factors of the raw material affecting the quality of the oil

Because of the presence of endogenous enzymes in skin, meat residues remaining thereon, and enzymes of microbiological origin, which catalyse unfavourable lipid metabolism and significantly accelerate oxidation and hydrolysis, it is important to properly handle the raw material used for oil production.

As early as 1903, Günther Müller stated that the muscles of freshly caught fish do not contain microorganisms. A dead fish is attacked by microorganisms that get into its meat from mucus on the surface of the skin, gills, or from the digestive tract. To get high quality oil, it is necessary that the raw material is fresh. Moreover, of particular importance is the method of storing the raw material and its adequately quick use, because many strains of psychrophilic bacteria living in fish produce active lipolytic enzymes. These enzymes are active even in refrigeration conditions. The microflora of fish and fish products depends on many factors:

bacterial contamination of the raw material, type of catch, hygienic condition, and quality of the equipment used for fishing. Secondary contamination frequently occurs during fish gutting, transport, and contact with the packaging material. The psychrophilic microflora from the species *Pseudomonas, Flavobacterium, Achromobacter, Micrococcus* is most often isolated. These species are usually isolated from mucus and correspond to the habitat of the fish. They can penetrate fish tissues and initiate the decomposition processes of mesophilic putrefactive bacteria, e.g. *Proteus sp., Serratia sp., Bacillus sp.*, originating from the environment in which the fish were placed after being caught. Pathogenic microorganisms including *Listeria monocytogenes, Salmonella sp., Clostridium botulinum, Staphylococcus aureus* may also be present in fish tissues. Excessive concentration of histamine in fish muscles may also pose a risk to the health of the consumer. Histamine results from the decarboxylation of L-histidine by the action of *Proteus sp., Hafnia sp., Ps. fluorescens, Micrococcus sp.* It is heat-resistant and during the preparation of meals its heating for consumption does not cause its decomposition.

A fish caught and processed in a way that prevents its contamination with foreign bacteria contains only native microflora. At 1°C, the microflora is unable to reach the phase of logarithmic growth in the muscle tissue environment faster than within 5 days. When a bacteria population that is foreign to the fish and is in the phase of logarithmic growth is introduced into the muscle tissue, the log phase at 1°C is very short and lasts one day. After this time, the population of the bacteria goes into the logarithmic growth phase and the products of putrefaction are found in the tissue. Since it is currently not possible to avoid bacterial contamination in industrial fisheries, we should assume that after being taken out on board, fish reveals a mixed microflora coming from water and contaminants. The more the proportion between them to the detriment of marine bacteria is undermined, the faster the processes of spoiling fish muscle tissue are. In the mucus covering fish skin, there are about 10^2-10^7 bacteria / cm^2, while the total number of aerobes in 1g of the digestive tract content is 10^3-10^8. Fish meat is less stable than the meat of warm-blooded animals because the pH value remains above 6.0, which contributes to faster bacterial proliferation.

3. Fate of the microbiological hazard during processing of fish oil

The method of wet melting is most commonly used to obtain fish oil. It is suitable for all types of fish both rich and low in fat. The raw material is crushed and boiled in a boiler. Protein denaturation is caused by water vapour, which facilitates the mechanical separation of solids from liquids. Then, the mass is divided into two fractions: liquid (lipid) fraction and solid fraction which mainly includes hydrated proteins. The protein fraction is then dried and processed into fishmeal. The liquid fraction contains significant amounts of suspended protein substances, which is why it is usually directed to sieves separating impurities. The last stage is the separation of oil from the appropriate fraction.

The specific fish oil smell is the result of the presence of lipid degradation and oxidation products as well as protein and amino acid breakdown products produced by the microorganisms present in the raw material. Oil odour removal is used to remove the smell. Vacuum distillation with saturated steam at 180°C–270°C is used on an industrial scale.

Refined fish oil can be further used to obtain various types of preparations with high contents of fatty acids: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), used as food supplements. Certain fatty acid fractions can be separated from the oils by means of physical, chemical or enzymatic methods. From the point of view of the microbiological safety of the final product, the most important factors limiting the growth of a population of microorganisms include primarily the temperature, deacidification and removal of water. It is believed that these repetitive thermal stages (boiling of the raw material in a boiler, steam deodorisation) combined with exposure to strong bases and

acids lead to the inactivation of all microorganisms and their toxins present in the raw material. Thermostable toxins, e.g. bacterial toxins, including histamine, which may be present in the raw material, are soluble in water, and thus they are removed from the oil together with the aqueous phase. In addition, as a result of drying, the remaining moisture in the final product is very low and the risk of contamination of fish oil at the end of production is negligible, but one should not exclude the possibility of contamination at the further stages of processing. However, it should be remembered that esterases, which are a separate category of lipolytic enzymes, also can esterify and hydrolyse fats, but unlike lipases, they can catalyse these reactions only in a non-hydrated environment. The most active producers of these enzymes are fungi of the genus *Aspergillus*. The lipase-catalysed reaction takes place at the interface of the lipid (substrate) phase and aqueous phase, in which the enzyme dissolves, so it should be noted that even 0.1% of water in oil may be the source of lipolytic microorganisms. Research on preparations containing fish oil encapsulated in gelatine capsules carried out in the laboratories of J.S. Hamilton Poland showed a low level of microbiological contamination at the level of less than 10 CFU/g, and the isolated strains were dominated by *Bacillus* bacteria, among which *Bacillus subtilis*, known as the hay bacillus or grass bacillus, was the most prevalent type, which is characterised by great adaptability to changing environmental conditions and can grow at a temperature reaching up to 60–70°C, hence it is called a thermotolerant bacillus. *Staphylococcus lugdunensis*, one of the coagulase-negative staphylococci (CoNS) colonising the skin and originating from secondary infections, was also isolated. The results of the microbiological tests have confirmed the microbiological purity of the raw materials used and compliance with GHPs during production.

Summary

As mentioned in the introduction, fish oil is oil derived from cod liver and other fish of the cod family. These are fish that live in cold northern waters that create difficult conditions for survival, which is why these animals accumulate large amounts of important nutrients in their tissues. Currently, 60–70% of the world production of fish oil comes from the processing of anchovies and sardines caught off the coast of South America. The quality assurance and standardisation are the two key factors in the production of dietary supplements. To determine the microbiological quality and safety of dietary supplements, not only should microbiological analysis be carried out, but one should also get familiar with internal and external factors that allow the growth of microorganisms in the product. In the next part of “Truth about dietary supplements revealed by a microbiologist”, I will present the influence of physical and chemical factors on the potential growth of microorganisms in raw materials and the final product.

About antibiotics and the detection of their residues in food

By Monika Czarnecka-Partyka

In accordance with their definition, antibiotics refer to substances of natural origin produced by living organisms (mainly by some fungi and bacteria) that can inhibit the growth of (or even kill) other microorganisms. The very fact of discovering antibiotics (the discovery of the first antibiotic was made by Alexander Fleming in 1928) and the possibility of their use in the protection of human health is one of the greatest achievements of humanity. However, as shown by the last social campaign, like any stick, the use of antibiotics also has two ends.

When extending the definition of these agents, one should take into account that in informal speech an average consumer understands the term “antibiotics” as antibiotics, i.e. substances of natural origin (microbial metabolites) or recently of semi-synthetic origin (when we deal with a starting substance of natural origin, and appropriate derivatives are obtained through chemical modifications), or of synthetic origin (when we deal with a synthetic reproduction of the natural structure by means of biochemical techniques), and chemotherapeutics (i.e. synthetically produced substances that similarly influence organisms and also enhance the action of other antimicrobials).

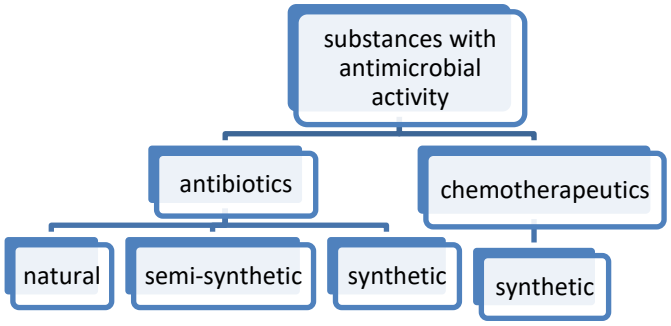

Figure 1. Division of antimicrobial preparations

Generally speaking, this nomenclature refers to the substances with antimicrobial properties (Figure 1).

The above definition shows that there is no unambiguous criterion for the division of these substances. Divisions can be made based on their chemical structure, but also according to other criteria, which are more important because of the use in therapy, for example the degree of absorption after oral administration, ease of penetration through tissues, or the route of excretion from the body.

Antimicrobial substances generally exhibit low toxicity in the human body. However, they may also cause undesirable effects in the form of direct toxic effects (possible damage to the kidneys, liver, bone marrow), allergic reactions (urticaria, rash, swelling, high temperature, in extreme cases – anaphylactic shock) or sterilisation of the human body (the possibility of reduction in, or significant depletion of, a natural bacterial flora). A gradual increase in the resistance of microorganisms to antimicrobial preparations is much more dangerous from the point of view of mankind. The increasing resistance of microorganisms to antimicrobials, i.e. antibiotics, has been recognised by the World Health Organization as one of the greatest threats to human health in the 21st century. In the case of resistance of microorganisms, one can talk about:

- primary resistance: when before the treatment it is already known that the drug does not work for the given type of microorganism;
- acquired resistance: when during the use of the drug there is a mutation or acquisition of genes encoding antibiotic resistance from other microorganisms that causes resistance to that drug;
- cross-resistance: when a single resistance mechanism confers resistance to an entire class of preparations;
- parallel resistance: when the development of a single resistance mechanism confers resistance to drugs with a similar mechanism of action.

One can also talk about microbiological, pharmacological or clinical resistance.

According to sources, one of the main reasons for the selection of resistant strains is the too frequent use of antibiotics and prescribing them to people and animals in many situations, when they are not necessarily needed. Another reason may be the excessive use of disinfectants, and thus the activation in the cells of microorganisms of appropriate mutations allowing survival in these difficult conditions.

The subject of antimicrobial preparations in food stirs up a lot of controversy, often pumping up headlines and provoking discussions on internet forums or during family and friends' gatherings. Popular statements I hear in the circle of friends and family refer to the beliefs about the widespread use of antibiotics in animal feeds, saying that *birds and fish are almost stuffed with antibiotics* and that fortunately voices are getting louder and louder about *nightmarish practices related to adding antibiotics to feeds in order to cause animal growth and intensify breeding.*

Indeed, as recently as 10 years ago (until 2006), some of these preparations were added to feed as growth stimulants, whose task was to increase animal body weight. Since 1 January 2006, the European Union, however, has prohibited the use of antibiotics growth promoters. At present, the presence of illegitimate levels of antimicrobial preparations in foodstuffs is most often the result of unlawful administration of medicines (this may be because of the failure to comply with the withdrawal period, improper dosing of medicines, or the administration of substances not authorised for a given species).

More or less complex analytical methods are necessary to answer the question about the levels of content in individual foodstuffs. At present, apart from relatively quick tests (characterised by different sensitivity and specificity), instrumental techniques are used in this area. The main technique is liquid chromatography in conjunction with tandem mass spectrometry. An adequate analytical efficiency is undoubtedly a necessary condition guaranteeing obtaining reliable results. The use of chromatographic techniques in the analysis of drug residues gives the opportunity to assess not only the type (qualitative analysis), but also the level of the content (quantitative analysis), and determine whether in the tested samples, apart from the parent substances, there are also products of metabolic transformation. Microbiological tests or the use of ELISA technology do not give such opportunities.

However, quite an important limitation in using chromatographic techniques is the need for proper preparation of samples, which is often time-consuming and expensive. This gives rise to the aspiration of individual research teams to develop appropriate screening methods, enabling the unambiguous determination of individual groups of analytes. Due to the complex relationships between the test matrices and analytes, this is a difficult and complicated task.

However, when using appropriate techniques, it is important to be able to determine the levels of antibiotic content in food on the one hand, and, on the other, to carry out broad activities aimed at raising awareness of the fact that a lot of care should be taken before any antibiotic is used by a doctor or veterinarian.

Genetic improvement of microorganisms

By Monika Zawistowska

From the beginning of time, microorganisms have coexisted with humans. They were, are and will be present in our natural environment, food, or even on our skin, in the digestive tract, fulfilling various functions. Microbes carry out a number of processes in nature, such as the mineralisation of organic compounds, which can later be used by other organisms, contribute to the formation of soil, and settle environments that even people did not dream about. Over the decades, people learned to use microorganisms on a larger scale for production purposes by observing their surroundings. In this way, bacteria and fungi were used to carry out processes that are important in industries such as baking, distilling, brewing, cheese-making, viticulture, and many others.

All living organisms, including microscopic ones, have limitations resulting from their structure or physiology. Genetic modification techniques help to achieve better performance of the processes that the organisms carry out.

One of the methods of improving microorganisms is mutagenesis. As the name suggests, this is the process of creating a mutant, i.e. an organism different from the parent strain in terms of genotype and phenotype. An interesting fact is that mutagenesis is a phenomenon that occurs naturally when the genetic code is transcribed. Such a process is called spontaneous mutagenesis and occurs during DNA replication when the template strand is shifted by one or more units, which in turn leads to a reading frame shift and may result in a protein with different properties, composition, amino acid chain length, or a molecule which is completely biologically useless. Of course, there are very efficient repair systems that usually deal with such disorders. Changes in the genetic code that will not be repaired and will be further duplicated contribute to the acquisition of new traits by microorganisms – to the so-called genetic variation and, in the long run, to evolution.

In a situation where external factors are intentionally used to exercise impact on an organism to obtain a mutation, we call this induced mutagenesis. There are different types of induced mutations; they usually refer to a single gene at the level of deoxyribonucleic acid and they are called point mutations. These include: substitutions, deletions and insertions. The first type consists in exchanging one pair of bases for another, e.g. a purine base for another purine base, or a pyrimidine base for another derived from this group (transition), and exchanging the purine base for pyrimidine and vice versa (transversion). The deletion occurs when a part of the genetic material, i.e. one or several nucleotides, is lost. Insertion involves the addition of one or several nucleotides to the DNA. There are classical methods used in induced mutagenesis: exposure of the cultures of bacteria or fungi to physical or chemical factors. The most common physical factors include UV radiation, ionizing radiation, temperature, whereas chemical ones include: alkylating agents, deaminating agents, intercalating agents – polycyclic aromatic and heterocyclic hydrocarbons, peroxides, free radicals, nitrogen base analogs. The effect of such exposure on microorganisms may be the formation of cross-links within the DNA strands and between them, cracks in the DNA structure, or even interruptions in the continuity of the DNA. An example may be the exposure of a bacterial suspension to UV light or high temperature, which causes the breaking of bonds between the nitrogenous base and deoxyribose, which leads to point mutations and further to the inactivation of a gene or its modification.

Genetic engineering is another area of improvement of microorganisms. The enormous progress of this relatively young field of science has led to the opportunity of introducing very precise changes to microorganisms, where we do not count on numerous non-specific mutations, but we bring about a change of selected genes.

Bacteria consist of movable genetic elements, which are defined as DNA capable of moving inside cells or between genomes of various microorganisms. The former activity is called transposition, while the latter is transformation. These mechanisms can be used to combine the desired characteristics of different species of microorganisms. Induced transformation can be brought about by changing the conditions under which the reaction is carried out, since not all microorganisms are able to carry it out under natural conditions. For this purpose, the so-called electroporation is used, which consists in the use of high-voltage electric shocks to create temporary pores in cell membranes. The application of Ca^{2+} ions may be another factor contributing to transformation. The transformation reaction is carried out by plasmids – extrachromosomal DNA molecules, which have the ability to self-replicate and therefore can move between different species.

However, genetic engineering is currently based on a series of reactions known as DNA cloning. The term means the multiplication of a particular segment of DNA using the appropriate vector in the host cells. The method involves isolating a selected gene from the genome of a given organism, reproducing that genetic material, making appropriate modifications thereof (or mutations) and introducing a gene into another organism. There are a number of necessary factors, such as restriction enzymes, ligases and vectors, determining whether all these activities can be carried out. Restriction enzymes are endonucleases whose task is to cleave DNA in the middle of a molecule. The products of this reaction are separated and analysed during electrophoresis. Ligases are another essential component in the cloning technique. These are enzymes that combine DNA fragments to form phosphodiester bonds between deoxyribose and the phosphate group. In addition, vectors play a very important role in that technology, because they are the basic carriers of genetic information introduced into a foreign organism. There are various types of vectors. The first type to be discovered was from bacterial plasmids. Other vectors include so-called bifunctional vectors. They enable duplication in the cells of two hosts. This is due to the possession of both elements of plasmid bacteria and markers specific to the other organism. There are also expression vectors that make it possible to express the inserted DNA into the corresponding protein. However, the vector itself is not enough, that is why the so-called expression cassette is used. It consists of a gene encoding a protein and a promoter and terminator (regulatory sequences). There are modifications to the cloning technique, e.g. cloning using PCR, i.e. a DNA polymerase chain reaction, which consists in multiple DNA chain replication using a specific enzyme. This method involves designing primers that are partly complementary to the gene we want to introduce into another organism and partly into the vector. In turn, as a result of the PCR reaction, we obtain a gene that has sequences complementary to the vector. The vector is cut. The next step is to introduce the vector with the embedded gene into the host cell where it can be expressed.

The application of the above method gives various possibilities of using bacterial vectors in many branches of industry, including in the pharmaceutical field. The first hormone produced outside the human body was insulin. The use of expression vectors in the Escherichia coli cell has made it possible to produce this compound outside the pancreas. Two genes coding for insulin chains were introduced into the plasmid and then into the cell. Insulin obtained in this way is more useful for humans, because it is made of a human gene, and not obtained from an animal pancreas (animal insulin could cause inflammation).

In addition to E. coli, which is a model microorganism for genetic research, effective

use is made of bacteria of the Bacillus genus because they produce significant amounts of protein in the substrate, which facilitates further recovery and purification of the compounds obtained. Bacterial vectors are used even in the development of new generation vaccines. Substance mutations are made in the creation of vaccines so that the strain does not become virulent again. Such vaccines are characterised by greater efficiency and safety.

It is hard not to notice that microorganisms are of interest to humans and in areas important for them, such as genetic engineering, industry, processing, and will probably remain as such for a long time.

Changes to food legislation

By Małgorzata Krzepkowska

Changes to food legislation

Commercial quality of agricultural and food products

Notice of the Speaker of the Sejm of the Republic of Poland of 8 November 2017 on the publication of the consolidated text of the Act on the commercial quality of agricultural products and foodstuffs (Polish Journal of Laws of 2017, item 2212)

Hygiene of foodstuffs

Commission Regulation (EU) 2017/1978 of 31 October 2017 amending Annex III to Regulation (EC) No 853/2004 of the European Parliament and of the Council laying down specific hygiene rules for food of animal origin as regard echinoderms harvested outside classified production areas

Commission Regulation (EU) 2017/1981 of 31 October 2017 amending Annex III to Regulation (EC) No 853/2004 of the European Parliament and of the Council as regards temperature conditions during transport of meat

Labelling

Regulation of the Minister of Agriculture and Rural Development of 9 November 2017 amending the regulation on the labelling of particular types of foodstuffs (Polish Journal of Laws of 2017, item 2015)

Commission Notice on the application of the principle of quantitative ingredients declaration (QUID) (2017/C 393/05)

Dietary supplements

Regulation of the Minister of Health of 22 November 2017 amending the regulation on the composition and labelling of dietary supplements (Polish Journal of Laws of 2017, item 2236)

Food for special purposes

Commission Delegated Regulation (EU) 2017/1798 of 2 June 2017 supplementing Regulation (EU) No 609/2013 of the European Parliament and of the Council as regards the specific compositional and information requirements for total diet replacement for weight control

Fisheries

Regulation (EU) 2017/2092 of the European Parliament and of the Council of 15 November 2017 amending Regulation (EU) No 1380/2013 on the common fisheries policy

Wine

Regulation of the Minister of Agriculture and Rural Development of 26 September 2017 on model forms of declarations regarding the grape harvest and the product, bottling and marketing of wine products (Polish Journal of Laws of 2017, item 1968)

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Olive oil

Commission Delegated Regulation (EU) 2017/1962 of 9 August 2017 amending Delegated Regulation (EU) No 611/2014 supplementing Regulation (EU) No 1308/2013 of the European Parliament and of the Council as regards the support programmes for the olive-oil and table-olives sector

Commission Implementing Regulation (EU) 2017/1963 of 9 August 2017 amending Implementing Regulation (EU) No 615/2014 laying down detailed rules for the application of Regulation (EU) No 1306/2013 of the European Parliament and of the Council and Regulation (EU) No 1308/2013 of the European Parliament and of the Council in respect of work programmes to support the olive oil and table olives sectors

Jams, preserves

Regulation of the Minister of Agriculture and Rural Development of 2 October 2017 amending the ordinance on specific requirements regarding the commercial quality of jams, preserves, jellies, marmalades, plum jams and sweetened chestnut purée (Polish Journal of Laws, item 1944).

Organic products

Corrigendum to Commission Regulation (EC) No 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control

Corrigendum to Commission Implementing Regulation (EU) No 392/2013 of 29 April 2013 amending Regulation (EC) No 889/2008 as regards the control system for organic production

Commission Implementing Regulation (EU) 2017/1862 of 16 October 2017 amending Regulation (EC) No 1235/2008 laying down detailed rules for implementation of Council Regulation (EC) No 834/2007 as regards the arrangements for imports of organic products from third countries

Novel food ingredients

Commission Implementing Decision (EU) 2017/2078 of 10 November 2017 authorising an extension of use of yeast beta-glucans as a novel food ingredient under Regulation (EC) No 258/97 of the European Parliament and of the Council

Commission Implementing Decision (EU) 2017/2079 of 10 November 2017 authorising the placing on the market of taxifolin-rich extract as a novel food ingredient under Regulation (EC) No 258/97 of the European Parliament and of the Council

Commission Implementing Decision (EU) 2017/2201 of 27 November 2017 authorising the placing on the market of 2'-fucosyllactose produced using Escherichia coli strain BL21 as a novel food ingredient in accordance with Regulation (EC) No 258/97 of the European Parliament and of the Council

Microbiological criteria

Commission Decision (EU) 2017/1583 of 1 September 2017 specifying, pursuant to Directive 2006/7/EC of the European Parliament and of the Council, EN ISO 17994:2014 as the standard on the equivalence of microbiological methods

Waste

Act of 12 October 2017 amending the act on the management of packaging and packaging waste and some other acts (Polish Journal of Laws of 2017, item 2056)

Pollution

Pesticides

Changes apply to Regulation (EC) 396/2005 as regards maximum residue levels for:

Bacillus amyloliquefaciens strain FZB24, Bacillus amyloliquefaciens strain MBI 600, clayed charcoal, dichlorprop-P, ethephon, etridiazole, flonicamid, fluazifop-P, hydrogen peroxide, metaldehyde, penconazole, spinetoram, tau-fluvalinate and Urtica spp. in or on certain products – Commission Regulation (EU) 2017/1777

Acrylamide

Commission Regulation (EU) 2017/2158 of

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20 November 2017 establishing mitigation measures and benchmark levels for the reduction of the presence of acrylamide in food

Antibiotics

Commission Implementing Regulation (EU) 2017/1558 of 14 September 2017 amending Regulation (EU) No 37/2010 to classify the substance bromelain as regards its maximum residue limit

Commission Implementing Regulation (EU) 2017/1559 of 14 September 2017 amending Regulation (EU) No 37/2010 to classify the maximum residue limit of the substance alarelin

Paralytic toxin (PSP)

Commission Regulation (EU) 2017/1980 of 31 October 2017 amending Annex III to Regulation (EC) No 2074/2005 as regards paralytic shellfish poison (PSP) detection method

GMO

Notice of the Speaker of the Sejm of the Republic of Poland of 30 October 2017 on the publication of a consolidated text of the Act on Microorganisms and Genetically Modified Organisms (Polish Journal of Laws of 2017, item 2134)

Feeds

Regulations concerning the authorisation of substances/preparations as feed additives:

- a preparation of endo-1,3(4)-beta-glucanase (EC 3.2.1.6) and endo-1,4-beta-xylanase (EC 3.2.1.8) produced by Aspergillus niger (NRRL 25541) as a feed additive for chickens for fattening, laying hens, pigs for fattening, minor poultry species and minor porcine species for fattening and amending Regulation (EC) No 255/2005 and repealing Regulation (EC) No 668/2003 (holder of the authorisation Andrés Pintaluba S.A.) – Commission Implementing Regulation (EU) 2017/1896
- preparations of Pediococcus parvulus DSM 28875, Lactobacillus casei DSM 28872 and Lactobacillus rhamnosus DSM 29226 as feed additives for all animal species – Commission Implementing Regulation (EU) 2017/1903
- a preparation of Bacillus licheniformis DSM 28710 as a feed additive for chickens for fattening and chickens reared for laying (holder of authorisation Huvepharma NV) – Commission Implementing Regulation (EU) 2017/1904
- the preparation of Saccharomyces cerevisiae CNCM I-1079 as a feed additive for chickens for fattening and for minor poultry species for fattening (holder of authorisation Danstar Ferment AG represented by Lallemand SAS) – Commission Implementing Regulation (EU) 2017/1905
- a preparation of endo-1,4-b-xylanase (EC 3.2.1.8) produced by Trichoderma citrinoviride Bisset (IMI SD135) as a feed additive for chickens reared for laying and minor poultry species reared for laying – Commission Implementing Regulation (EU) 2017/1906
- a preparation of Lactobacillus plantarum (KKP/593/p and KKP/788/p) and Lactobacillus buchneri (KKP/907/p) as a feed additive for cattle and sheep – Commission Implementing Regulation (EU) 2017/1907
- salinomycin sodium (Sacox 120 microGranulate and Sacox 200 microGranulate) as a feed additive for chickens for fattening and chickens reared for laying and repealing Regulations (EC) No 1852/2003 and (EC) No 1463/2004 (holder of authorisation Huvepharma NV) – Commission Implementing Regulation (EU) 2017/1914

Commission Implementing Regulation (EU) 2017/2231 of 4 December 2017 amending Implementing Regulation (EU) 2016/329 as regards the name of the

holder of the authorisation of 6-phytase

Commission Implementing Regulation (EU) 2017/2233 of 4 December 2017 amending Regulation (EC) No 900/2009 as regards the characterisation of selenomethionine produced by Saccharomyces cerevisiae CNCM I-3399

Feed contamination

Commission Regulation (EU) 2017/2229 of 4 December 2017 amending Annex I to Directive 2002/32/EC of the European Parliament and of the Council as regards maximum levels for lead, mercury, melamine and decoquinate

Animal health

Regulation of the Minister of Agriculture and Rural Development of 15 September 2017 amending the regulation on measures taken in connection with the outbreak of African swine fever (Polish Journal of Laws of 2017, item 1779)

Regulation of the Minister of Agriculture and Rural Development of 22 September 2017 amending the regulation on defining areas covered by orders, prohibitions or restrictions and other control or protective measures established in connection with the occurrence of African swine fever, in which farms are located, where pigs are kept (Polish Journal of Laws of 2017, item 1792)

Commission Implementing Decision (EU) 2017/1593 of 20 September 2017 amending the Annex to Implementing Decision (EU) 2017/247 on protective measures in relation to outbreaks of the highly pathogenic avian influenza in certain Member States

Act of 15 September 2017 amending the Act on the amendment of the act on the protection of animal health and combating infectious diseases of animals (Polish Journal of Laws of 2017, item 1836)

Notice of the Speaker of the Sejm of the Republic of Poland of 28 September 2017 on the publication of a consolidated text of the Act on the protection of animal health and combating infectious diseases of animals (Polish Journal of Laws, item 1855)

Commission Implementing Decision (EU) 2017/1839 of 9 October 2017 amending Implementing Decision 2013/426/EU on measures to prevent the introduction into the Union of the African swine fever virus from certain third countries or parts of the territory of third countries in which the presence of that disease is confirmed and repealing Decision 2011/78/EU

Commission Implementing Decision (EU) 2017/1841 of 10 October 2017 amending Implementing Decision (EU) 2017/247 on protective measures in relation to outbreaks of the highly pathogenic avian influenza in certain Member States

Commission Implementing Decision (EU) 2017/1845 of 11 October 2017 amending the Annex to Implementing Decision (EU) 2017/247 on protective measures in relation to outbreaks of the highly pathogenic avian influenza in certain Member States

Commission Implementing Decision (EU) 2017/1850 of 11 October 2017. amending Implementing Decision 2014/709/EU concerning animal health control measures relating to African swine fever in certain Member States

Commission Implementing Decision (EU) 2017/1851 of 11 October 2017 amending Annex II(E) to Decision 92/260/EEC as regards the requirements for African horse sickness of registered horses temporarily admitted from Algeria, Kuwait, Morocco, Oman, Qatar, Tunisia and Turkey, and amending Annex I to Decision 2004/211/EC as regards the entry for the United Arab Emirates in the list of third countries and parts thereof from which imports into the Union of live equidae and semen, ova and embryos of the equine species are authorised

Commission Implementing Decision (EU) 2017/1910 of 17 October 2017 amending Decision 93/52/EEC as regards the brucellosis (B. melitensis)-free status of certain regions of Spain, Decision 2003/467/EC as regards the official bovine brucellosis-free status of Cyprus and of certain regions of Spain, and as regards the official enzootic-bovine-leucosis-free status of Italy, and Decision 2005/779/EC as regards the swine

vesicular disease-free status of the region of Campania of Italy

Commission Implementing Decision (EU) 2017/1930 of 20 October 2017 amending the Annex to Implementing Decision (EU) 2017/247 on protective measures in relation to outbreaks of the highly pathogenic avian influenza in certain Member States

Commission Implementing Decision (EU) 2017/1969 of 27 October 2017 amending the Annex to Implementing Decision (EU) 2017/247 on protective measures in relation to outbreaks of the highly pathogenic avian influenza in certain Member States

Commission Regulation (EU) 2017/1972 of 30 October 2017 amending Annexes I and III to Regulation (EC) No 999/2001 of the European Parliament and of the Council as regards a surveillance programme for chronic wasting disease in cervids in Estonia, Finland, Latvia, Lithuania, Poland and Sweden and repealing Commission Decision 2007/182/EC

Regulation of the Minister of Agriculture and Rural Development of 8 September 2017 amending the regulation on defining areas covered by orders, prohibitions or restrictions and other control or protective measures established in connection with the occurrence of African swine fever, in which farms are located, where pigs are kept (Polish Journal of Laws of 2017, item 2088)

Commission Implementing Decision (EU) 2017/2000 of 6 November 2017 amending the Annex to Implementing Decision (EU) 2017/247 on protective measures in relation to outbreaks of the highly pathogenic avian influenza in certain Member States

Commission Implementing Decision (EU) 2017/2165 of 17 November 2017 approving the plan for the eradication of African swine fever in feral pigs in certain areas of the Czech Republic

Commission Implementing Decision (EU) 2017/2166 of 17 November 2017 amending the Annex to Implementing Decision 2014/709/EU concerning animal health control measures relating to African swine fever in certain Member States

Commission Implementing Decision (EU) 2017/2198 of 27 November 2017 concerning certain interim protective measures relating to African swine fever in Poland

Official controls

Regulation of the Minister of Health of 5 October 2017 on fees for activities performed by the authorities of the State Sanitary Inspection as part of official food controls (Polish Journal of Laws of 2017, item 2012)

Commission Regulation (EU) 2017/1979 of 31 October 2017 amending Annex II to Regulation (EC) No 854/2004 of the European Parliament and of the Council laying down specific rules for the organisation of officials controls on products of animal origin intended for human consumption as regard echinoderms harvested outside classified production areas

Protected designations of origin, protected geographical indications

Commission implementing regulations entering the following names in the Register of protected designations of origin and protected geographical indications:

Porc noir de Bigorre (PDO) – Commission Implementing Regulation (EU) 2017/1552

Chasselas de Moissac (PDO) – Commission Implementing Regulation (EU) 2017/1553

Jambon noir de Bigorre (PDO) – Commission Implementing Regulation (EU) 2017/1554

Πευκοθυμαρόμελο_Κρήτης (Pefkothymaromelo Kritis) (PDO) – Commission Implementing Regulation (EU) 2017/1555

Ternera de Extremadura (PGI) – Commission Implementing Regulation (EU) 2017/1556

Coco de Paimpol (PDO) – Commission Implementing Regulation (EU) 2017/1557

Acciughe sotto sale del mar Ligure (PGI) – Commission Implementing Regulation (EU) 2017/1577

HAMILTON

Gorgonzola (PDO) – Commission Implementing Regulation (EU) 2017/1595

Fenalår fra Norge (PGI) – Commission Implementing Regulation (EU) 2017/1752

Ossolano (PDO) – Commission Implementing Regulation (EU) 2017/1788

Capón de Vilalba (PGI) – Commission Implementing Regulation (EU) 2017/1833

Pera dell'Emilia Romagna (PGI) – Commission Implementing Regulation (EU) 2017/1837

Dealurile Crişanei (PGI) – Commission Implementing Regulation (EU) 2017/1847

Dealurile Zarandului (PGI) – Commission Implementing Regulation (EU) 2017/1848

Almansa (PDO) – Commission Implementing Regulation (EU) 2017/1863

Rosé des Riceys (PDO) – Commission Implementing Regulation (EU) 2017/1864

Vacqueyras (PDO) – Commission Implementing Regulation (EU) 2017/1865

Półtorak staropolski tradycyjny (TSG), Dwójniak staropolski tradycyjny (TSG), Trójniak staropolski tradycyjny (TSG), Czwórniak staropolski tradycyjny (TSG), Kiełbasa jałowcowa staropolska (TSG), Kiełbasa myśliwska staropolska (TSG) and Olej rydzowy tradycyjny (TSG) – Commission Implementing Regulation (EU) 2017/1898

traditional specialities guaranteed (Tradiční Lovecký salám/Tradičná Lovecká saláma (TSG) and Tradiční Špekáčky/Tradičné Špekačky (TSG)) – Commission Implementing Regulation (EU) 2017/1899

Varaždinsko zelje (PDO) – Commission Implementing Regulation (EU) 2017/1900

Danbo (PGI) – Commission Implementing Regulation (EU) 2017/1901

Méntrida (PDO) – Commission Implementing Regulation (EU) 2017/1927

Kintoa (PDO) – Commission Implementing Regulation (EU) 2017/1928

Bleu d'Auvergne (PDO) – Commission Implementing Regulation (EU) 2017/1930

Saucisson d'Ardenne/Collier d'Ardenne/Pipe d'Ardenne (PGI) – Commission Implementing Regulation (EU) 2017/1956

'Slavonski kulen'/'Slavonski kulin' (PGI) – Commission Implementing Regulation (EU) 2017/1992

'Quartirolo Lombardo' (PDO) – Commission Implementing Regulation (EU) 2017/2009

'Kiełbasa piaszczańska' (PGI) – Commission Implementing Regulation (EU) 2017/2156

'Arancia del Gargano' (PGI) – Commission Implementing Regulation (EU) 2017/2183

'Međimursko meso 'z tiblice' (PGI) – Commission Implementing Regulation (EU) 2017/2204

'Vieille Kriek, Vieille Kriek-Lambic, Vieille Framboise-Lambic, Vieux fruit-Lambic/Oude Kriek, Oude Kriekenlambiek, Oude Frambozenlambiek, Oude Fruit-lambiek' (TSG) and 'Vieille Gueuze, Vieille Gueuze-Lambic, Vieux Lambic/Oude Geuze, Oude Geuze-Lambiek, Oude Lambiek' (TSG) – Commission Implementing Regulation (EU) 2017/2216

'Makói petrezselyemgyökér' (PGI) – Commission Implementing Regulation (EU) 2017/2227

State as at 8 December 2017.