

About *Listeria monocytogenes* from a laboratory point of view

What should we know about the biology and the reproductive characteristics of the pathogenic bacterium, and about the possible protection against it? In the compilation of *Laboratorium.hu*, information about this pathogen, as well as food chain safety related regulations currently in force in the EU and in Hungary are indicated.

In the columns of *Laboratorium.hu*, you can find a detailed description of EüM (former: the Hungarian Ministry of Health) decree 4/1998 (XI. 11.), which defines permissible microbiological contamination levels in foods in Hungary. Among the recommended limit values for the internal quality control of food producers, *Listeria monocytogenes* limit values are set for dairy products in Annex 4 of the decree.

Foodstuffs intended for public consumption should be tested and evaluated from a microbiological food safety point of view according to Paragraph 1 of the above decree and with the application of Commission Regulation (EC) No 2073/2005 (and Commission Regulation (EC) No 1441/2007 amending it).

The article is made relevant by the unfortunate foodborne infection cases that took place during the editing of Issue 3 of the 2018 volume of *ÉVIK*. The Hungarian authorities learned about the fact that various types of quick-frozen vegetable mixtures, contaminated with *Listeria monocytogenes*, have been marketed in the EU through the RASFF (Rapid Alert System Food and Feed) operated in the EU. In the member states of the European Union, 47 cases of *Listeria* infection were registered, nine of which were fatal. In connection with the alert, 29 thousand tons of products manufactured between August 2016 and June 2018 were recalled by the National Food Chain Safety Office (NFCSSO). Laboratory testing of the domestically distributed products was also ongoing during the editing of our article.

<https://laboratorium.hu/listeria>

Success in separation technique

An important event was celebrated recently by the Joint Research and Training Laboratory on Separation Techniques, established and operated by WESSLING Nonprofit Kft. and the Institute of Chemistry of ELTE: one of their talented researchers, Zoltán Nyíri defended his doctoral dissertation at the end of June.

The doctoral dissertation of Zoltán Nyíri, titled „development of methods suitable for the examination of the polycyclic aromatic hydrocarbon content of complex matrices” was defended on June 29. There were an unusually large number of questions posed at the event, clearly indicating the interest in the subject of the thesis.

One of the most important tasks of the corporate social responsibility of the WESSLING corporate group is to support future generations and to cooperate with the domestic education system. In higher education, we have been having a fruitful cooperation with one of the most prestigious Hungarian institutions, Eötvös Loránd University, for already a decade. The Joint Research and Training Laboratory on Separation Techniques (EKOL) was established by the Faculty of Science and the Institute of Chemistry of Eötvös Loránd University and WESSLING Hungary Kft. to develop new measurement methods that can be implemented by the application of gas chromatography (GC), liquid chromatography (HPLC) and other coupled techniques.

The work of Zoltán Nyíri has made an analytical procedure available with which trace amounts of certain highly poisonous polycyclic aromatic hydrocarbons can be detected in foods with a higher sensitivity and lower measurement uncertainty compared to previous methods.

The 100 series of E numbers (artificial food colorings)

What is more beneficial: if the colorings of foodstuffs are natural or artificial? Do we have to be afraid of additives with E numbers? Can artificial food colorings cause health damage? Of the E numbers, this time the 100 series was showcased by the article of *Laboratorium.hu*.

A popular series related to E numbers has been launched recently by *Laboratorium.hu* in its Kitchen chemistry column, winner of a bronze medal at the CMA (Content Marketing Award) competition. In the first part, it was discussed why E numbers are needed, how their system is structured, and in terms of risk why the issue of quantity is of paramount importance.

In their most recent article, the 100 series of E numbers, i.e., food colorings are presented, with a review of *Regulation (EC) No 1333/2008 of the European Parliament and of the Council on food additives*, also discussing the classification of organic colorings according to their colors,

as well as mineral colorings (E170-175) and natural and artificial dyes and their labeling requirements.

E numbers are used to uniquely identify food additives authorized in the European Union. The letter „E” means European (additives authorized in Europe). [Editor’s note.]

<https://laboratorium.hu/etelszinezek>

Watershed warming

How does climate change affect water systems? In addition to droughts and floods, it also influences drinking water quality – this was revealed at the conference titled Our Climate Affairs. Fluctuations of weather and temperature make their effects felt primarily through the water systems in the vicinity of the affected areas.

An increase of only a few degrees Celsius in the temperature of Earth’s atmosphere can radically alter the ratio of liquid and vapor phase water masses, it can modify the characteristics of the currents of the worlds’ seas, and thus can change the regional climate of the continents. During dry periods, difficulties in water supply may arise, and in times of humid weather conditions, water masses collecting on the surface may cause floods and inland inundation, and they can endanger the purity of waters at greater depths, along with healthy drinking water supply – said Dr. Tamás János Szigeti, editor-in-chief of the Journal of Food Investigation, an expert of WESSLING Hungary Kft. In his presentation titled „*The impact of climate change is reflected most clearly in the water management of Earth*”, given at the National University of Public Service at the end of May, he also spoke about the fact that if municipal and industrial wastes are deposited in a traditional landfill without recycling in an area with large amounts of precipitation, then hazardous materials leached from the wastes can cause the contamination of water resources, while microorganisms living on the decomposition products of wastes can lead to the infection of water resources.

Microplastics in the river Rába

Following the river Tisza, microplastics were also found in the tributaries of the Danube: during the Tiny Plastic Puzzle project, 1.7 and 12.1 microplastic particles per cubic meter

were detected by an independent laboratory in the rivers Ipoly and Rába, respectively – this was announced at an environmental conference on June 28. The report of Laboratorium.hu reveals that measurements will also be carried out by the researchers on our biggest river, the Danube, in the fall.

Gábor Bordós of WESSLING Hungary Kft. said at the conference that one cubic meter of the water of the Rába contains 12.1 microplastic particles, and this can mean as much as 20.7 million particles per day. He emphasized that these particles are typically not made of the widely used materials also detected in the catchment area of the river Tisza, but of substances used for precision components and electronics products (e.g., polyoxymethylene). Microplastics in the environment cause not only damage to environmental elements, but can also pose food chain safety risks when entering the food chain.

Microplastics are plastic fragments or plastic particles in the environment with an average diameter of less than 5 mm. Microplastics are produced partly from the wastes of various packaging materials, and partly by the wear and tear of other industrial articles (toothpastes, abrasives, vehicle tires, textiles, etc.). [Editor’s note.]

<https://laboratorium.hu/mikromuanyagrabaipoly>

NFCSO news

NFCSO ranked first among European authorities

The National Food Chain Safety Office (NFCSO) finished first in the ranking of European authorities. According to the latest survey of the European Food Safety Authority (EFSA), Hungarian people have the most confidence in their national authority – said Róbert Zsigó, state secretary responsible for food safety, to MTI on Tuesday.

During the representative survey, involving 6,200 people in 25 member states, the answer was sought to the question how effective national authorities are in protecting the population against food safety risks in the different countries. The survey also revealed that most consumers expect fast and detailed information when a food that is hazardous to their health is placed on the market.

Information related to risks is considered most credible when coming from healthcare

professionals, researchers and food safety authorities, and people also trust in their family members and friends – added the state secretary.

He emphasized that, based on the results, the Hungarian population appreciates the efforts of NFCSO to improve the food chain safety situation and for faster information flow. He also pointed out that the results of the European research are in line with NFCSO's own surveys, which show that 85 percent of people are familiar with the office, three quarters of them trust its activities, meaning that NFCSO is one of the most respected state institutions. A continuous improvement in the field of food chain safety has been experienced by the Hungarian population in recent years, but most people would spend even more resources on controlling food safety, an area which is, together with healthcare, one of the most important fields of the authority – said the state secretary.

Róbert Zsigó called the Food Chain Safety Strategy, adopted in 2013, a turning point, according to the principles of which news related to public health are published without delay.

Consumer experiences, complaints and desires are channeled into the operation of the office, with the help of the toll-free green number, the cell phone application, the authority website and social media. NFCSO also considers it important to respond to press inquiries, since journalists are able to convey professionally credible answers to millions of citizens, thus preventing pseudo-scientific information or information that is less objective due to economic interests, related to food chain safety events, from spreading.

Focus on product recall

An important and „hot” topic, product recall was discussed at the second Round Table event of NFCSO. In addition to the producers' and merchants' sides, representatives of civil society, advocating the rights of consumers, as well as of the legal and authority area were present at the thought-provoking exchange. One of the most important lessons learned from the event is that a responsible enterprise, a supportive authority and a conscious buyer are all indispensable for effective product recall.

Recollection of objectionable food items from consumers was selected as the topic of the second Round Table event of NFCSO. At the event held in Budapest on June 12, 2018, representatives

of about 40 organizations participated in order to discuss whether product recall should really be considered as the bane of enterprises.

In their presentations, experts invited to address the topic presented good and bad examples, as well as the results of the latest, representative consumer survey of NFCSO, and recall rates in the European Union in the light of the RASFF system. An interesting result of the survey was, for example, that roughly 80% of Hungarian people think that the recall of objectionable products is the joint task of the manufacturer and the authority, and they obtain information primarily through the media and social media.

Participants of the round table discussion, including representatives of civil society, food producers and distributors, as well as the Ministry of Agriculture and the authority, shared their experiences during a detailed discussion of the topic. One of the most important lessons learned from the event was that a responsible enterprise, a supportive authority and a conscious buyer are all indispensable for effective product recall. In the case of the latter group, i.e., buyers, awareness-raising is needed in order for people to get acquainted with the basic concepts related to the topic (for example, the main difference between product withdrawal and recall). Participants also identified as a common task to make the population understand more clearly the true meaning of product recall and the concept of the item concerned, in which not only the authority, but also food enterprises and consumer protection NGOs can also participate. This is so, because it is important for buyers to understand that recalling a product by a manufacturer is, in the majority of cases, a positive, responsible decision on the part of the enterprise, bearing in mind the interests of consumers. This is especially true for voluntary recalls as a result of the self-monitoring of businesses.

When sharing the experiences and opinions, time and again the importance of the role played by the press was raised, because the majority of interested consumers obtains information from the media. Objective and balanced information is of key importance to avoid unnecessary “panic situations” in connection with product recalls.

The survey also pointed out that in Hungary the population clearly expects active involvement of the authority in product recalls. In order to meet this expectation as much as possible, NFCSO's future plans include, in cooperation with the enterprises concerned, the creation of a public website where both residents and market players can obtain transparent information on current product recalls that concern the food chain.

“Free” test: Nine gluten-free spaghetti products tested by NFCSO

In the sixth Supermint product test of the year, gluten-free spaghetti were tested by NFCSO. The gluten, lactose and milk protein contents of the products, among other things, were analyzed by the experts in the laboratory, but the presence of allergenic egg protein was also investigated. All 9 corn flour based pasta products passed the tests. However, once again there were some labeling deficiencies, therefore, the responsible enterprises were issued warnings by the inspectors of NFCSO in three cases.

Of the 9 products tested, 5 were made from corn flour and 4 from a mixture of corn flour and rice flour. In terms of their origin, 4 pastas were produced by Italian, 2 by Romanian and 2 by Hungarian manufacturers. On the packaging of one of the products a Dutch manufacturer was listed, but the pasta was actually produced by a Romanian company. The responsible food entrepreneur was ordered to correct the misleading data on the label. In addition to being gluten-free, the product was also declared by the manufacturer egg-free in 3 cases, and lactose and milk-free in 2 cases each.

It is reassuring that each pasta met the criterion of being gluten-free. The term “gluten-free” can only be used if the food contains no more than 20 mg/kg gluten. For 8 of the products tested, this parameter was below the limit of detection, while one product contained gluten in an amount of 7.4 mg/kg, i.e., it could be detected, but the amount was below the limit value.

NFCSO’s laboratory analyses were also aimed at the mycotoxin, GMO, milk protein and egg protein contents of the products. Tests results were favorable, since no objectionable items were found by the experts, with regard to the parameters examined. In the case of the two products labeled as lactose-free, the possible presence of lactose was tested separately, but the products analyzed were not objectionable from this point of view either.

Quality criteria for pastas are contained in the Hungarian Food Codex. In addition to moisture content, these include various cooking properties (e.g., the degree of overcooking and sticking together). These quality parameters were also checked by the experts and each pasta met the requirements.

When checking product labels, the most typical deficiency was the incorrect indication of nutritional

values. Because of the labeling deficiencies, authority proceedings were initiated by NFCSO against the manufacturers of 3 products, and the companies concerned were ordered to correct the errors.

In the preference test of gluten-free spaghetti, pastas were evaluated by lay and expert judges, both in the uncooked and cooked states. Scores for external appearance, texture, smell, color and, of course, taste were given by adventurous judges. In the Supermint test, the Le Veneziane spaghetti was ranked first. Second was Nutri Free, while Cornito finished third.

For more information and detailed test results please visit the Supermint product test website of NFCSO: <http://szupermenta.hu/megfeleltok-a-glutenmentes-spagettik/>

Quick-frozen vegetables recalled by NFCSO

The recall of frozen vegetable and quick-frozen vegetable items was ordered by NFCSO because of the possible presence of a highly pathogenic variant of the bacterium *Listeria monocytogenes*. The company concerned informed its partners and the withdrawal of the products of various brands was initiated all over Europe. NFCSO is asking consumers to pay attention to the information posted in the stores and to cook thoroughly (not ready-to-eat) frozen vegetables before use.

The rapid epidemiological report of the European Food Safety Authority (EFSA) and the European Centre for Disease Prevention and Control (ECDC) was published on July 3, 2018, stating that an epidemic in several EU countries since 2015 was probably caused by quick-frozen sweet corn and possibly by other frozen vegetables. Illnesses were registered in five EU member states (Austria, Denmark, Finland, Sweden and the United Kingdom). There have been no known cases related to this product range in Hungary.

The illnesses have been caused by a virulent pathogenic variant of the bacterium called *Listeria monocytogenes*.

Available data support the fact that bacterial contamination of the products took place at the Hungarian plant of the company Greenyard. NFCSO prohibited the placing on the market of all frozen vegetable and vegetable mix items manufactured in the plant concerned between August 2016 and June 2018 with immediate

effect, ordered their withdrawal and the recall of the items already at consumers. Product recall, as well as notification of its partners were initiated immediately by the company, and the withdrawal, involving different brands, has begun throughout Europe.

Currently, following a more thorough cleaning, the plant is carrying out test production with an increased sampling rate, the products are not sold.

In order to reduce the risk of infection, as was already pointed out earlier, (not ready-to-eat) frozen vegetables should be cooked thoroughly by consumers. This is especially important for those most susceptible to listeriosis (the elderly, pregnant women, infants, adults with weakened immune systems).

About Listeria monocytogenes

The bacterium Listeria monocytogenes is often found in foods, but only causes illnesses in the case of higher bacterial counts. Listeria can also propagate at the temperature of the refrigerator, therefore, the consumption of any food that is stored in the refrigerator for more than 5 days may be risky, if its composition supports the growth of the bacterium.

Development of the symptoms generally takes between 1 day and 1 week following the consumption, but it could take as much as 90 days. Symptoms of an infection include fever, vomiting, diarrhea and headache. Susceptible group: infants, pregnant women, the elderly and people with a weak immune system.

Further information on Listeria can be downloaded from the <http://portal.nebih.gov.hu/hu/-/kerdezz-felelek-a-liszteriozisrol> website.

NFCSO action against an online cake shop

Based on a citizen's report, a test purchase was conducted by NFCSO at a confectionery plant operating a website also advertising home-made confectionery items. In the cake intended primarily for children, the laboratory of NFCSO found a coloring that can only be used with a specific warning, in an amount exceeding the limit value. It was revealing that the "home confectioners" operating behind the website were not qualified or licensed. After consultation with the authority, the company operating the website terminated

the unlawful activity immediately, however, due to the multiple violations of the law, a significant fine of nearly 1 million HUF was still imposed.

A citizen's report drew the attention of the experts of NFCSO to products manufactured without a license, proper qualifications, i.e., skills, and technological background. The activity of the website also advertising home-made confectionery items was checked by a test purchase. The operator of the website agreed with housewives, among others, who manufactured the products under uncontrolled circumstances, without knowing and maintaining professional and food safety regulations.

Although the pre-packaged cake ordered during the test purchase was delivered to the address of the buyer cooled, but it did not have any kind of label. No invoice ensuring traceability was attached to the product by the manufacturer of the cake, and the buyer was not informed of the name of the manufacturer or the place of production, and the use-by date, the list of storage conditions, the exact composition, the additive content and the list of allergenic ingredients were missing.

Several azo dyes (azorubine E122, sunset yellow FCF E110, tartrazine E102 and cochineal red E124) were detected in the cake by the laboratory of NFCSO. The amount of sunset yellow dye exceeded the permissible limit value fivefold. The use of these food colorings is strictly regulated and limit values should be complied with. It is mandatory to inform consumers about their use, as they may trigger allergic reactions in people sensitive to them, and it is also a regulation to include the sentence „it may have an adverse effect on the activities and attention of children”.

“Home confectioners” of the website did not have proper qualifications, the special permit required by the authority, and their activities were not registered with the competent local government. The operator of the website acknowledged the deficiencies found during the procedure and terminated the illegal activity immediately, but due to the multiple violations of the law, a significant fine of nearly 1 million HUF was still imposed by the authority.

NFCSO once again draws the attention of consumers to the food safety risks of food production and distribution without authorization. Especially in the case of products intended for young children, caution, conscious consumer behavior and knowing the origin and labeling of the product are important, as well as not to buy unknown foods.

Cocktail tomatoes passing inspection

In its latest Supermint project, cocktail tomatoes, one of the popular ingredients of light salads were examined by NFC SO. 16 products were tested by the experts along food safety and plant protection considerations. The fruits were also tested for 300 pesticide active ingredients. The products checked met both food safety and quality requirements.

Based on a survey of shelves in domestic stores, 16 cocktail and cherry tomatoes were sampled by the associates of the office in the latest Supermint test. Pesticide residue and microbiological tests were carried out on the samples in the laboratory of NFC SO. The products did not contain pesticide residues exceeding the limit values and they also proved to be impeccable from a microbiological point of view.

Of the nutritional values, sugar, dry matter, moisture and acid contents were examined by the experts. They also measured vitamin C and lycopene contents, even though there are no specifications for these values. The total sugar content of the products ranged from 3.03 to 6.43 g/100 g. The highest sugar content was found in the case of the product called "sugarpie". In the case of vitamin C, the measured values were between 21.2 and 48.2 mg/100 g. The most vitamin C was contained in the tomato with the highest sugar content.

Traceability of the sampled items is, of course, still a fundamental requirement, and this time all products complied with it. Compliance with the laws on labeling was also achieved, i.e., mandatory data, such as the name and address of the producer or the distributor, the country of origin of the product and quality class, could be found on the labels of the products. The tomatoes tested proved to be a high quality and safe food.

A preference test was also carried out on the tomato samples. The external appearance, texture, smell and taste of the cocktail tomatoes were scored by lay and expert judges. Based on these, the cherry tomatoes marketed by Nemeskert Kft. proved to be the best. Veresi Piroska cocktail tomatoes came in second, while Veresi Biborka cocktail tomatoes finished third. All three products were of domestic origin.

Further information, interesting tidbits and detailed test results are available at the NFC SO Supermint product test website: <http://szupermenta.hu/koktelparadicsomokat-teszteltunk/>

Tisztelt Előfizető!

Engedje meg, hogy a WESSLING Közhasznú Nonprofit Kft. (1045 Budapest, Anonymus utca 6.), mint az Élelmiszervizsgálati Közlemények (ÉVIK) kiadója röviden, az Európai Parlament és a Tanács (EU) 2016/679 rendelet (GDPR) 13. cikkével összhangban tájékoztassa az előfizetése kapcsán megvalósuló adatkezelés részleteiről.

Mindenekelőtt felhívom szíves figyelmét, hogy a WESSLING Közhasznú Nonprofit Kft. a GDPR 5. cikke szerinti alapelvek figyelembevételével kizárólag az előfizetés teljesítése céljából nélkülözhetetlen személyes adatokat tárolja, melyeket közvetlenül Öntől, illetve Tisztelt Társaságuktól szerzett meg. A fent írtak szerint a WESSLING Közhasznú Nonprofit Kft. az előfizetés megrendelések megadott (1) megrendelői adatokat (megrendelő neve, elektronikus levelezési címe, telefonszáma), (2) számlázási adatokat (megrendelő számlázási neve, címe), valamint a (3) kézbesítéshez nélkülözhetetlen adatokat (címezett neve, címe) tárolja.

Az adatkezelés időtartama az előfizetés időtartamához igazodik, így amennyiben előfizetését bármely okból nem kívánja meghosszabbítani, úgy az előfizetés megszűnését követő két (2) évvel külön felhívás hiányában is intézkedünk mindazon személyes adatok törléséről, amelyeket a számvitelről szóló 2000. évi C. törvény szerint a WESSLING Közhasznú Nonprofit Kft. nem köteles a továbbiakban tárolni.

Felhívom szíves figyelmét arra is, hogy a megadott személyes adatokhoz kizárólag a magyarországi WESSLING cégcsoport munkavállalói férhetnek hozzá, azok közül egyedül a számlázási adatok kerülnek harmadik személy részére továbbításra.

Az adatkezelés időtartama alatt a WESSLING Közhasznú Nonprofit Kft. maradéktalanul biztosítja az adatkezelésben érintett természetes személyek GDPR 12-23. cikkei szerinti jogainak maradéktalan érvényesülését, melyre tekintettel Önnek, illetve a Tisztelt Társaságuk által kapcsolattartóként megjelölt munkavállalóknak lehetősége van egyebek mellett az adatkezelés részleteiről további tájékoztatást kérni, az adatkezelésben érintett adatokhoz díjmentesen hozzáférni, a pontatlan személyes adat helyesbítését, a hiányos adat kiegészítését, a jogszerűtlenül (jogalap nélkül) kezelt személyes adat törlését kérni, valamint az adatkezelés korlátozása mellett a WESSLING Közhasznú Nonprofit Kft. adatkezelésével kapcsolatban jogorvoslattal élni.

Amennyiben az adatkezelés részleteivel kapcsolatban további tájékoztatásra lenne szüksége, vagy bármilyen kérdése merülne fel, kérem, hogy kérdéseit a szemelyes.adatvedelem@wessling.hu elektronikus levelezési címre küldje meg.



Tisztelettel:

Dr. Szigeti Tamás János
főszerkesztő