



# NEWSLETTER

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*Merry Christmas*

AND HAPPY NEW YEAR!

We wish our Customers and Business Partners a peaceful time, full of Christmas Eve warmth and special moments spent with your loved ones.

May the coming New Year bring you prosperity and satisfaction.

 HAMILTON

# SIGNIFICANT EXPANSION OF THE DETERMINATION LIST OF PESTICIDE RESIDUES IN SP LABORATORIJA

Pesticides play an important role in food production. They are used to protect crops from insects, weeds, fungi and other pests in order to increase yields. This is especially important in countries facing food shortages, where the use of pesticides in agriculture has led to a significant increase in the production of agricultural products. However, the presence of pesticide residues in the finished product is undesirable, due to the harmful effect on human health. They are potentially toxic, because they can have teratogenic, mutagenic and carcinogenic effects on human and animal health.

More than 1000 active pesticide substances are used in the world, and each individual pesticide active substance has different properties and toxicological effects. The diversity of matrices and compounds, belonging to different groups of pesticides, has led to the existence of a large number of different sample preparation methods (e.g. QuEChERS), as well as methods for pesticide residue determination (Multi Residual Method, Single Residual Method, etc.). The number of active pesticide substances, their level of determination, the necessary time as well as the analytical equipment used (GC-MS/MS, LC-MS/MS, GC-MS/HSS, etc.), define the way of routine work. Work experience related to the determination of pesticide residues in various matrices, those with a high or low content of water, sugar, oil or starch (fruits, vegetables, cereals, oilseeds, honey, food of animal origin, nutrients, etc.), as well as in "difficult " matrices (tea, herbs, spices, etc.), allows to select and apply the right analytical procedure for each individual sample.

SP Laboratorija has many years of experience in determining pesticide residues. It has been engaged in this testing since 2003, and since 2004 within the scope of accreditation. In order to follow trends, changes in EU regulations, as well as market requirements, SP Laboratorija is permanently expanding the list of pesticide residues. The flexible scope of accreditation, which was granted to the laboratory in 2015, enables the introduction of new pesticide residues within the accredited test subject (food and animal feed), which results in a quick response to the customer's request and the issuance of a test report with a combined ILAC MRA mark (accreditation symbol and ILAC MRA mark).

With over 25 staff members dedicated to testing pesticide residues and the most modern equipment, SP Laboratorija is the one of the leading laboratories in this field in Serbia and the region.

During 2023, SP Laboratorija made a large expansion of the list of flexible scope in the part of pesticide residue determination with as many as **277 new active pesticide substances**, evenly distributed on both techniques, gas and liquid chromatography with mass/mass detectors in different matrices (fruits, vegetables, cereals, oilseeds, honey, food of animal origin and feed for animals). The largest number of new pesticide residues was implemented at the end of the year, during November and December. Each implementation is preceded by the development of a new activity, validation/verification and decision-making on the acceptance of changes by the person responsible for managing this test in SP Laboratorija. After these activities, the List of accredited activities in the flexible area (LFO 001 for pesticide residues) is updated, available on the website (<https://splaboratorija.rs/en/o-nama/sertifikati-i-obimakreditacije/akreditacija/>).

The competence of SP Laboratorija is permanently confirmed by the Accreditation Body of Serbia and the laboratory is also recognized and controlled by the EU Reference Laboratories for Residues of Pesticides, the Ministry of Agriculture, Forestry and Water Management of Serbia, as well as various foreign certification bodies such as QS (Qualität und Sicherheit GmbH) and GMP+.

By permanently investing in employee training and state-of-the-art equipment, we provide all the necessary capacity to meet the requests of customers, during different periods of the year (season of ripening or processing of fruits and vegetables, grains or oilseeds) and in special, emergency cases. The offer related to the determination of pesticide residues may include a recommendation of the scope of the analysis, as well as the possibility of performing a "quick" analysis within 24h or 48h.



*Autosampler on liquid chromatography  
LC-MS/MS*

# ALLERGENS IN FOOD

Allergens in food represent a significant health problem today and food production requires constant monitoring due to people sensitive to allergens. For this reason, the detection and quantification of allergens is important, and the compliance of labeling is also crucial.

According to the Regulation on declaration, labeling and advertising of food (Official Gazette of RS No. 19/2017, 16/2018, 17/2020, 118/2020, 17/2022, 23/2022 and 30/2022) ingredients that can cause allergies and/or intolerances that must be stated on the declaration are:

- 1) cereals containing gluten, i.e. wheat (such as spelt and khorasan wheat), rye, barley, oats and their hybridised strains, as well as products from these cereals, except:
  - wheat-based glucose syrup, including dextrose
  - wheat-based maltodextrin
  - glucose syrups based on barley,
  - cereals used for the production of alcoholic distillates, including ethyl alcohol of agricultural origin;
- 2) crustaceans (crabs) and crustacean products;
- 3) eggs and egg products;
- 4) fish and fishery products except:
  - fish gelatin used as a carrier for vitamins and carotenoid preparations,
  - fish gelatin or fish bladder gelatin (Isinglass) for clarifying beer and wine;
- 5) peanuts and peanut products;
- 6) soy and soy products, except:
  - fully refined soybean oil and fat
  - natural extract rich in tocopherols (E 306), natural D-alpha tocopherol, D-alpha tocopherol acetate, D-alpha tocopherol succinate of soy origin,
  - isolated phytosterols and phytosterol esters from soybean oil,
  - plant stanol esters produced from soybean oil sterols;
- 7) milk and milk products (including lactose), except:
  - whey used for the production of alcoholic distillates, including ethyl alcohol of agricultural origin,
  - lactitol;
- 8) nuts: almond (*communis* L.), hazelnut (*Corylus avellana*), walnut (*Juglans regia*), cashew nut (*Anacardium occidentale*), pecan nut (*Carya illinoensis*), Brazil nut (*Bertholletia excelsa*), pistachio (*Pistacia vera*), macadamia nut and Queensland nut (*Maccadamia ternifolia*) and their products, except:
  - nuts used for the production of alcoholic distillates, including ethyl alcohol of agricultural origin;
- 9) celery and celery products;
- 10) mustard and mustard products;
- 11) sesame seeds and sesame products;
- 12) sulfur dioxide and sulfites in concentrations greater than 10 mg/kg or 10 mg/l expressed as SO<sub>2</sub>, which is calculated for products that are ready for consumption or that have been reconstituted in accordance with the manufacturer's instructions;
- 13) lupin and lupin products;
- 14) shellfish and other molluscs and their products.

In European Union *Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004* defines that all those who deal with food (produce and serve it) are obliged to indicate 14 allergens to consumers (milk, soy, peanuts, cereals containing gluten, nuts (hazelnuts, almonds, cashews, pecans, pistachios, macadamia nuts, walnut, Brazil nut), eggs, sesame, mustard, celery, lupine, sulfites, fish, crustaceans, molluscs) that are present in their products by means of labels or other means of providing information.

It is very important to distinguish:

- food allergy, affects the immune system, where a small amount of food can be a trigger for various symptoms, including those that are life-threatening
- intolerance, affects only the digestive system, can cause serious symptoms, most often occurs due to lack of enzymes
- celiac disease, an autoimmune disease where gluten causes inflammatory changes in the the small intestine lining.

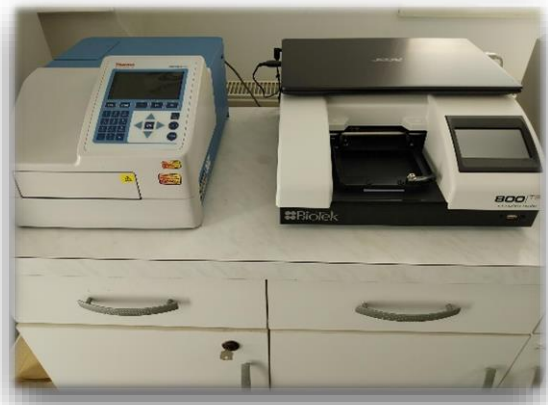
The food allergen management system includes monitoring from the raw material, through the production process (cleaning) to the finished product, as well as risk assessment when identifying the presence of allergens that are intentionally present in a product and quantifying allergens that are unintentionally present in the product (cross contact allergens).

Given that the only solution for people with food allergies is a diet that excludes allergens, it is very important to offer quality tests, among other things, rapid tests to enable monitoring from the raw material to the finished product. Control of food products can be achieved using sensitive analytical techniques such as:

- LFD (Lateral flow device) suitable for quick detection of the presence of allergens on the spot
- ELISA (Enzyme linked immunosorbent assay) technique based on antibody-antigen reaction is very specific, sensitive and applicable for a wide range of matrices
- PCR (Polymerase chain reaction) technique, which is important for all allergens, especially for some that cannot be determined by ELISA, such as celery.



*Real Time PCR (PCR technique)*



*Microplate reader (ELISA technique)*

During many years of work on allergens, there is still no international threshold for allergen intake for most. The intake threshold is the smallest amount of allergen that can cause an allergic reaction in the body, or it can be defined as the largest amount of allergen that does not cause an allergic reaction when ingested through food. A clearly defined intake threshold adopted in many countries by national regulations exists only for gluten:

- "Gluten-free" - a product containing < 20 mg/kg of gluten
- "Very low gluten content" - a product containing from 20 mg/kg to 100 mg/kg of gluten

The implementation of allergen management concepts is very important for all organizations whether they have contact with food or not. "From farm to fork" concept is a form of tracking food production, from raw material processing to the final form of food that is served as a finished dish.

In production conditions where various raw materials are used on the same production lines, i.e. different allergens, there is a high possibility of contamination. It is necessary to carry out intensive cleaning, regular control for the presence of residual allergens and, of course, proper declaration. Efficiency of control is higher if raw materials, production lines, semi-finished products and final products are included.

Although there is currently no regulation with clearly defined permitted levels of all food allergens that cause an allergic reaction, the importance of allergen analyzes is significant, even crucial.

SP Laboratorija has been successfully applying

allergen determination analyzes for 10 years. The first accreditation in this field was in 2013 with the introduction of gluten. In addition to the above, the following allergens can be determined in SP Laboratorija:

- gluten in fermented and hydrolyzed foods
- peanuts
- hazelnut
- soybeans
- milk
- egg
- mustard
- walnut
- sesame
- lupin
- celery

When choosing a method for determining allergens, it is very important to take into account cross-reaction with similar plant species. For example, for the determination of the celery allergen, there was no specific ELISA technique for a long time due to cross-reaction with similar plant species such as parsley, carrot, fennel, coriander. For this reason, celery determination is performed by the Real Time PCR method, both for detection and quantification. Guided by the same principle, all methods of determining allergens in SP Laboratorija were selected.

The latest world research has shown that the number of allergens is increasing, so new allergies to edible insects are also appearing. Manufacturers dealing with equipment and accessories for the determination of allergens are working on expanding their product range to include kits for insects, peas, oats, and buckwheat (backwheat) as new allergens. SP Laboratorija follows all trends, both in the part of determination and in the part of product declaring, and implements methods in a timely manner.

## FESTIVAL OF SCIENCE FOR CHILDREN IN BEČEJ

In Bečej, on October 12, 2023, the second "Bečej Science Festival" was held on the town square, organized by the Society for the Development and Promotion of Science "Pipette" from Bečej. The main goal of the festival is the promotion of science among children and young people, choosing topics from the fields of natural sciences, engineering, technology and informatics.

In addition to primary and secondary schools, the exhibitors were also local companies that, through activities and experiments adapted to children of all ages, presented their work. Within more than 30 stands gathered, this year SP Laboratorija brought its work closer to visitors, too. The exhibitors were mostly children accompanied by their teachers and children with parents employed in the participating companies.



In the presentation of elementary school pupils, visitors could see experiments in chemistry and physics, such as the explosion of hydrogen, the behavior of sugar, what viscosity and centrifugal force are, water filtration, and get to know "closer" bacteria and viruses. High school students made metal roses at their stand, prepared the game "Traces of Crime" by combining biology and logic through fun, and visitors had the opportunity to measure themselves and calculate their body mass index (BMI). One of the most interesting experiments was the sublimation process using dry ice and balloons. SP Laboratorija presented itself through various "magical" chemical and biological experiments that were extremely interesting to the children.

It is certainly the wish of all of us that this beautiful tradition of promoting science among young people is maintained, and according to the organizers, the plan is to include the youngest ones - children of preschool age - at the next festival.



# CHANGES IN SERBIAN LEGISLATION IN THE PERIOD FROM 15.07.2023 - 15.12.2023.

## GENERAL

- "Official Gazette of RS" no. 51/2018, 103/2018, 110/2023 - Regulation on nutritional and health claims that are stated on the food declaration

## SPICES

- "Official Gazette of RS" no. 72/2014, 23/2015, 69/2023 - Regulation on the quality of spices, spice extracts and spice mixtures

## BEER, WINE, ALCOHOLIC BEVERAGES

- "Official Gazette of RS" No. 107/2014, 72/2023 - Regulation on parameters and methods for the analysis and determination of the quality of wine and other products made from grapes, wine and wine used in wine production

## ANIMAL FEED

- "Official Gazette of RS" no. 25/2011, 27/2014, 86/2023 - Regulation on veterinary-sanitary conditions, i.e. general and special conditions for the hygiene of food of animal origin, as well as hygiene conditions of animal origin

## UNITS OF MEASUREMENT AND MEASUREMENTS

- "Official Gazette of RS" no. 86/2023 - Regulation on certification of materialized length measures - general purpose length measures

- "Official Gazette of RS" no. 99/2023 - Regulation on certification of non-automatic scales
- "Official Gazette of RS" no. 90/2023 - Regulation on certification of water meters intended for use in households, business premises and light industry

## HEALTH SAFETY

- "Official Gazette of RS" no. 81/2019, 126/2020, 90/2021, 118/2021, 127/2022, 110/2023 - Regulation on maximum concentrations of certain contaminants in food
- "Official Gazette of the RS" No. 52/2023, 87/2023 - Regulation on establishing the Animal Feed Safety Monitoring Program for the year 2023
- "Official Gazette of RS" No. 54/2023, 87/2023 - Regulation on establishing the Program for monitoring the safety of food of animal origin for the year 2023
- "Official Gazette of RS" no. 87/2023 - Regulation on establishing the Program for monitoring the safety of food of plant and mixed origin for the year 2023
- "Official Gazette of RS" no. 87/2023 - Regulation on establishing the Program for monitoring the safety of food of animal origin and imported animal feed for the year 2023

## TOBACCO AND TOBACCO PRODUCTS

- "Official Gazette RS" no. 101/2005, 90/2007, 95/2010, 36/2011, 93/2012, 108/2013, 95/2018, 91/2019, 92/2023 - Law on Tobacco

# CHANGES IN EUROPEAN FOOD LEGISLATION

## Pesticide residues

**Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC:**

- Commission Regulation (EU) 2023/1536 of 25 July 2023 amending Annex III to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels **for nicotine** in or on certain products

- Commission Regulation (EU) 2023/1719 of 8 September 2023 amending Annexes II and IV to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels **for isoxaben, metaldehyde, Metarhizium brunneum strain Ma 43, paclobutrazol and Straight Chain Lepidopteran Pheromones (SCLP)**

- Commission Regulation (EU) 2023/1753 of 11 September 2023 amending Annexes II and III to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels **for pyriproxyfen**

- Commission Regulation (EU) 2023/1783 of 15 September 2023 amending Annexes II and V to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels **for denatonium benzoate, diuron, etoxazole, methomyl and teflubenzuron**

- Commission Regulation (EU) 2023/2382 of 29 September 2023 amending Annexes II and V to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels **for carbetamide, carboxin and triflumuron**

