GP

news digest #010

Renewal of MicroVal certificates for confirmation of *Salmonella* spp. and *Cronobacter* spp. starting from colony material

MALDI Biotyper®: a certified confirmation method for *Salmonella* spp. and *Cronobacter* spp.

With 1 in 10 people falling ill from contaminated food each year, foodborne illness continues to be a serious threat to public health and challenges healthcare systems worldwide.[1] The European Centre for Disease Prevention and Control (ECDC) and the European Food Safety Authority (EFSA) reported that, in 2020, consumption of contaminated food in Europe caused just over 20,000 human cases of foodborne diseases.[2]

There are many possibilities for food products to become contaminated along the chain of production, delivery and consumption, largely due to improper agricultural practices and the spread of pathogens through insects.[3]

Salmonella enterica is a leading cause of foodborne illness in many countries and the second most reported zoonotic disease in Europe.[2] In 2020, there were a total of 694 outbreaks of salmonellosis in European countries, resulting in 3,686 cases of illness, 812 hospitalizations and 7 deaths.[2] Salmonellosis has been associated with a variety of food supplies, and outbreaks have been reported in foods of both plant and animal origin. The ECDC and EFSA found that the three food vehicles most commonly involved in strong evidence of foodborne *Salmonella* outbreaks were eggs, pork and bakery products.

Cronobacter is a genus of gram-negative bacteria of the family *Enterobacteriaceae*. *Cronobacter sakazakii* can be found in different food and agriculture matrices and has recently gained international attention due to strains being found in milk powder and instant baby formula.[4] Although *Cronobacter* spp. can cause illness such as urinary tract infections in people of all ages, this foodborne contamination can be very serious in infants and lead to severe neurological disabilities or even death.[5]

Due to limitations in reporting, the official figures and statistics on foodborne diseases are likely to only represent a small proportion of the actual number of cases.

Therefore, it is vital to obtain more accurate data on the epidemiology of foodborne diseases and their causative agents. This will help to guide the development and implementation of food safety policies, strengthen the effectiveness and efficiency of food safety systems and better protect consumers.[6]

Currently in the EU, regulation No. 2073/2005 applies to food samples. It sets legal microbiological criteria that can be used to assess the acceptability of food. Each foodborne microorganism has an analytical reference, e.g. ISO 22964 for detection of *Cronobacter* and ISO 6579 for *Salmonella*. The International Organization for Standardization (ISO) has also developed ISO 16140-6, a dedicated standard for the validation of confirmation methods, which advance a suspected result to a confirmed result.

Extended certification for Bruker

The MALDI Biotyper solution uses mass spectrometry based analysis to identify organisms from microbial cultures. Its robust workflow requires only a few steps to generate a high-quality and reliable microorganism confirmation, within minutes of detecting a positive selective culture. This makes it ideal for food laboratories that want to avoid time-consuming methods to detect foodborne diseases.

MicroVal, the international certification organisation for the validation and approval of alternative methods for the microbiological analysis of food and beverages, has recently renewed two certificates covering the MALDI Biotyper GP and RUO systems. The first versions of these certificates were issued by MicroVal early 2018, with a validity of 4 years, hence requiring a renewal in 2022. The certificates respectively declare that the MALDI Biotyper has been validated as a complete solution for the confirmation of the foodborne pathogens *Salmonella* spp. and *Cronobacter* spp., in accordance with ISO 16140-6. The MALDI Biotyper is the only MALDI-TOF system certified as a confirmation method by MicroVAL. The culture media listed in the table illustrate the method's broad flexibility and applicability. The MALDI Biotyper is not limited to one nutrient agar brand and saves time and money by shortening the workflow for confirmation.

Click here to download the certificates: https://microval.org/en/issued-certificates

Organism	Scope of the certificate (new expiry date)	Certificate No.
Cronobacter	Confirmation of *Cronobacter* spp. from colonies isolated on ESIA, CCI and any non-selective nutrient agar (expiry date 28 Feb 2026)	2017LR72
Salmonella	Confirmation of *Salmonella* spp. from colonies isolated on XLD, BGA, Chromogenics based on C8-esterase activity detection (RAPID´*Salmonella*, Brilliance™ *Salmonella*, ASAP, CASE Chromogenic) and non-selective nutrient agars (expiry date 11 Feb 2026)	2017LR73

For more information, visit
https://www.bruker.com/en/applications/microbiology-and-diagnostics/food-beverage-microbiology/maldi-biotyper-for-food-microbiology.html

References
1. WHO, Food Safety fact sheet, 2020 https://www.who.int/NEWS-ROOM/FACT-SHEETS/DETAIL/FOOD-SAFETY
2. ECDC, EFSA, The European Union One Health 2020 Zoonoses Report, 2021 https://www.ecdc.europa.eu/sites/default/files/documents/j-efsa-2021-6971.pdf
3. Zurek L, Gorham JR., Insects as vectors of foodborne pathogens. In Wiley Handbook of Science and Technology for Homeland Security, J.G. Voeller (Ed.), 2008. https://doi.org/10.1002/9780470087923.hhs365
4. CDC, *Cronobacter* Infection and Infants https://www.cdc.gov/cronobacter/infection-and-infants.html
5. CDC, Food Safety and Invasive *Cronobacter* Infections during Early Infancy, 2020 https://wwwnc.cdc.gov/eid/article/26/5/19-0858_article?deliveryName=USCDC_331-DM26146
6. WHO, The burden of foodborne diseases in the WHO european region, 2017 https://www.euro.who.int/__data/assets/pdf_file/0005/402989/50607-WHO-Food-Safety-publicationV4_Web.pdf

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