



SSICA RELIES ON ULTRAWAVE TO IMPROVE THE DIGESTION QUALITY OF LARGE FOOD SAMPLE AMOUNTS



| CUSTOMER

Since 1922, the Experimental Station for the Food Preserving Industry (SSICA), operating through its headquarters in Parma, Italy, has been promoting the scientific and technical progress of the Italian food-preserving industry for fruits, vegetables, meat and fish products through activities of research, consultancy, training and dissemination of information.

| CHALLENGE

“Hot block digestion systems required long times to complete digestion and the final solutions often presented with a high residual carbon content that interfered with subsequent analysis”

| SOLUTION

The ultraWAVE replaced their existing techniques and enabled the digestion of difficult matrices while obtaining very low blanks and no evidence of cross contamination. Any combination of sample types and weights with different acid chemistries can be digested in the same run.

| BACKGROUND

Thanks to its specialized staff and cutting-edge laboratories, SSICA is one of the most important applied research bodies in the preserved food sector in Europe and participates in national and international research projects for new products, new processing and preservation procedures.

The main focus of their work is to develop and propose new methods in order to solve challenges that manufacturers have faced in food matrices when dealing with high quality analysis and food safety issues.

| IMPLEMENTATION

SSICA performs a wide variety of analytical testing along with studies and production process assessments. The ultimate target is to ensure compliance with legal requirements and to achieve added value to the food production chain.

An example of their activities is to establish the real geographical provenance of food products and to develop a consistent analytical traceability method. The published paper “Towards the development of a multi-element analysis by ICP-*oa*-TOF-MS for tracing the geographical origin of processed tomato products” R. Fragni et al./Food Control 48 (2015) 96-101 exhaustively reports their experience in developing a method, based on the combination of the ultraWAVE and ICP-MS, for estimating the content of 22 micro-elements (Li, Be, Al, V, Cr, Mn, Co, Cu, Zn, Ga, As, Rb, Sr, Ag, Cd,

LAB PROFILE ultraWAVE | FOOD



In, Cs, Ba, Tl, Pb, Bi, and U) in three different categories of processed tomato products.

The number of samples analyzed in the laboratory can vary depending on the nature of the project. At peak times, they can be required to prepare up to 50 samples per day.

Prior to the acquisition of the first ultraWAVE in 2015, they were using hot-block digestion systems. They weighed the sample in an open digestion vessel and started the run under a fume hood. The main challenge with this approach was the long time required for achieving digestion. Moreover, for complex matrices, the final solutions often presented a high residual carbon content which interfered with their ICP-MS analyses.

To overcome the issues related to excess residual carbon content, the quality of their sample digestions needed to be greatly improved.

This was true especially for reactive samples such as oil, cheese and other high fat content samples that led to various problems in obtaining low blanks.

THE ULTRAWAVE

“The first reason for choosing the ultraWAVE system was that we were now able to completely digest all sample types with low residual acidity, low carbon content and low concentration of dissolved solids.”

Consequently, the formation of polyatomic spectral interferences is limited, thus improving the ICP’s stability and reducing carbon buildup in the sample introduction and interface regions.

Thanks to its unique high temperature and pressure capabilities, the ultraWAVE achieved complete digestion of all their sample types, even of reactive samples and large sample amounts, such as 1 g of edible oil using diluted acids.

The ultraWAVE ensures high digestion quality even with low acid volume, which reduces dilution factors and blanks, ensuring greater performance of the ICP-MS.

“With the ultraWAVE, any combination of sample types and weights with different acid chemistries can be digested in the same run. This is a real plus for us since we always receive many food samples with different matrices. With the ultraWAVE, we are now able to digest all these samples in one shot!”

They use 5 and 15 positions rack with quartz vials for maximum purity assuring a very low memory effect. This, in turn consistently improves the analytical blank.

FUTURE PLANS

“We are 100% satisfied with the system and we would never go back to hot-block techniques.”

“When we chose Milestone, the turning point was the professionalism and expertise of the Italian distributor FKV and Milestone staff. They helped us step by step during the development of the digestion program. We did not experience this same level of support from other microwave distributors.”

“The ultraWAVE is unique and we decided to purchase it since it is the highest performing microwave digestion system on the market.”

– SSICA Experimental Station for the Food Preserving Industry



ABOUT MILESTONE

With over 50 patents and more than 20,000 instruments installed in laboratories around the world, Milestone has been widely recognized as the global leader in metals prep technology for the past 30 years. Committed to providing safe, reliable and flexible platforms to enhance your lab’s productivity, customers worldwide look to Milestone for their metals digestion, organic extractions, mercury analysis and clean chemistry processing needs.



MILESTONE
H E L P I N G
C H E M I S T S

Milestone Inc. - 25 Controls Drive, Shelton, CT 06484

Tel: (203) 925-4240 - Toll-free: (866) 995-5100 - Fax (203) 925-4241

www.milestonesci.com - email: mwave@milestonesci.com