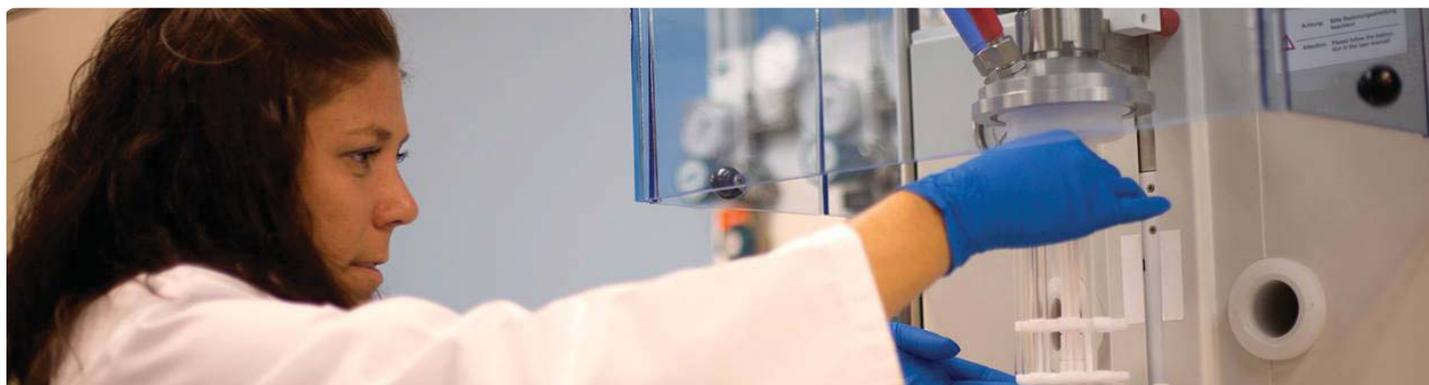


Milestone's UltraWAVE Removes All Sample Prep Challenges For Dietary Supplement Manufacturer



Customer As a manufacturer with three major product lines – general health and wellness, personal skincare and weight management – 4Life Research's quality control (QC) lab has a wide range of samples to digest and analyze for trace metals.



Challenge Previously, we'd outsource elemental testing to a third-party contract lab. As the company grew, so did our number of lab samples.

Solution "Ultimately, bringing the UltraWAVE technology in-house was the most sustainable and scalable solution to our workload. Today, the UltraWAVE is the only microwave digestion (sample prep) unit we use in-house. My experience is that there's practically no learning curve with this sample prep instrument. The UltraWAVE's high throughput capability has meshed very well with our increased sample load during the last year."

Background

David and Bianca Lisonbee launched 4Life Research in 1998 with a commitment to scientific integrity and innovation. During the past 15 years, the company has established offices in twenty-one markets outside the United States of America, and is presently preparing to open its twenty-third global market in Sao Paulo, Brazil.

In addition to ensuring customers the highest quality supplementation, 4Life is committed to the success of its independent distributors, as well as, charitable work through its international foundation, Foundation 4Life. In 2013, Direct Selling News recognized 4Life as among the top 50 direct selling companies in the world. 4Life is a good standing member of the United Natural Products Association (UNPA) and Co-Founder Bianca Lisonbee represents the company as a Direct Selling Association (DSA) board member.

As a world leader in supplement manufacturing, 4Life has offices on five continents serving a global network of independent distributors through science, success, and service.

Instrumentation

In our Sandy, Utah quality control lab we have one UltraWAVE from Milestone and one Agilent ICP-MS 7700x equipped with a collision cell and high matrix introduction system (HMI).



Combined, these technologies increase matrix tolerance up to 10x compared to conventional ICP-MS.

Prior to the acquisition of the UltraWAVE and 7700x ICPMS, we outsourced all samples to a third-party contract testing lab. One of the primary challenges we faced was the turnaround time for results, as well as, spending a significant amount of money for lab services. Since bringing these two technologies into our QC Lab, we've put processes in place to analyze for trace metals contamination via the methods outlined in USP <232> and <233>.



“Ultimately, bringing the UltraWAVE technology in-house was the most sustainable and scalable solution to our workload.”

– Ashley Wilson, Chemist II, Quality Control Lab

We currently digest about 200 samples a month, averaging approximately 50 samples per week. The samples we digest range from raw materials to finished products: plant materials, fish oils, liquid vitamins, topical creams, tablets and gel-caps are a few examples. All of these samples are highly organic in nature and the UltraWAVE microwave digestion unit can easily handle this wide variety of sample types safely and effectively.

The UltraWAVE

During digestion of the sample types mentioned above, significant pressures build up due to a large amount of CO₂ and NO_x gas generation. The UltraWAVE's high pressure capability is designed to handle the pressure that this digestion process generates. At 4Life Research, we were most impressed by how the UltraWAVE digests mixed sample matrices in the same run. Also, the disposable glass vials for performing those

4Life Research Ultrawave Digestion Protocol

Solids:

0.25 grams of sample + 1 mL DI H₂O + 2.5 mL HNO₃ (65%) + 0.5 mL HCl (37%)

Oil-based products:

0.25 grams of sample + 2 mL H₂O₂ (30%) + 1.5 mL HNO₃ (65%) + 0.5 mL HCl (37%)

digestions is a real bonus because we don't need to spend time cleaning vials between digestions. The glass vials are inexpensive and the consumables costs related to UltraWAVE are negligible.

In the UltraWAVE, we use the fifteen position rack configured with disposable glass vials and only a single program to digest all of our sample types- total digestion time is 45- 50 minutes including cool down. For a lab brand new to elemental testing, the UltraWAVE posed no learning curve to how microwave digestion technology works. Given the capabilities and ease of use associated with the UltraWAVE, our sample preparation bottleneck was completely removed and our chemists could spend their time and focus developing and validating methods for the ICP-MS.

Future Plans

4Life Research performs two digestion cycles per day, which only utilizes 50-60% of the UltraWAVE's capability. As our sample loads increase, we intend to purchase a second sample prep instrument from Milestone: The UltraWAVE.

About Milestone

With over 50 patents and more than 18,000 instruments installed in laboratories around the world, Milestone has been widely recognized as the global leader in metals prep technology for the past 26 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.

Learn more or request an onsite demonstration:
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