Amino Acid Hydrolysis
Microwave Technology to Accelerate Your Hydrolysis

Discover® 2.0 for Microwave Hydrolysis
iWave® Sensor Technology
Custom Microwave Methods

We Simplify Science
Efficient Hydrolysis

The Discover 2.0 uses microwave technology to hydrolyze proteins and peptides, resulting in improved control of hydrolysis conditions with better accuracy, reproducibility, speed, and robustness. Featuring intuitive software with a 10” touchscreen interface, the Discover will program a method in seconds and achieve reproducible results in as little as 15 minutes.

- Fastest Technique Available
- Run Acid and Base Hydrolysis in a Single System
- Small Footprint
- Automate up to 48 Samples
Rapid Hydrolysis

Microwave Technology

Accurate and fast hydrolysis.

The efficient microwave cavity with true internal temperature reading and in-situ stirring ensures a rapid and accurate hydrolysis. Combine these fast hydrolysis times with the integrated rapid cooling to ensure safe handling of a fully hydrolyzed sample in mere minutes.

Automation Options

Automate up to 48 samples.

Auto samplers for the Discover 2.0 are available in 12 and 48 position modules, providing fully automated hydrolysis capabilities that are ideal for high-throughput labs.
The Discover 2.0 can be used for simple and fast hydrolysis of a variety of samples, including but not limited to:

- Dry & Wet Pet Food
- Feeds
- Meat
- Nutraceuticals
- Processed Foods
- Dairy
Benefits

Compact

Its small size is a big advantage.

The Discover 2.0 is only 14" wide. That’s about the width of an analytical balance. Take up minimum bench top space and add efficiency.

Flexible

Hydrolyze all sample types with one instrument.

Perform either an acid hydrolysis or base hydrolysis with the same system. With pre-programmed methods, amino acid hydrolysis is simple.
The Process

1. **Load Autosampler**
   Prepared 10 or 35 mL vessels containing samples, reagents, and stir bars can be loaded onto the 12- or 48-position autosampler, allowing for automated reaction handling and throughput.

2. **Select a Method**
   Select the desired method, program the number of samples, and press “Play”.

3. **Microwave Energy is Applied**
   The reaction vessel is pressurized and microwave heating is applied to the vessel contents. This results in direct molecular activation and fast and efficient heating. Electromagnetic stirring ensures equal heat distribution and reaction homogeneity.

4. **iWave Feature Controls Temperature**
   iWave technology allows for accurate temperature monitoring of the vessel contents regardless of sample type or solvent volume.

5. **Compressed Air Cools to Allow for Safe Handling**
   Upon method completion, compressed air cooling is applied, enabling rapid cooling for safe handling and preparation for analysis.
**Consumables**

10 mL and 35 mL Vessels

Multiple vessel sizes are available to meet your specific sample needs. Both 10 mL and 35 mL Pyrex pressure-rated vessels are available for use with the Discover 2.0 system.

10 mL and 35 mL Vessel Caps

Easy to apply and easy to remove, the Teflon® lined vessel caps enable self-venting capability of the hydrolysis reaction within a safe environment (and without loss of sample).

Micro and Egg Shaped Stir Bars

Each designed for optimal stirring within the specified vessel, the micro stir bar is best utilized in the 10 mL vessel while the egg shaped stir bar is ideal for the 35 mL vessel.

35 mL Teflon Liner

The Teflon liner can be used with 35 mL vessels and is specifically designed for the corrosive nature of base hydrolysis conditions; it adds an additional layer of safety to an already robust environment.
Microwave-Assisted Amino Acid Hydrolysis of Cheese

Introduction
Cheese ripening involves several biochemical changes, such as fat hydrolysis, lactose fermentation, and protein degradation. Amino acids in food are both free unbound molecules as well as amino acid residues bound together via peptide bonds, creating the various proteins present in dairy products. In order to fully evaluate the amino acid content of cheese throughout the ripening process, an accurate evaluation of the amino acid composition is necessary. To do this, proteins must be hydrolyzed, effectively liberating amino acid residues, which can then be quantitatively detected in the hydrolysate.

Traditionally, proteins are chemically hydrolyzed under acidic or alkaline conditions upon treatment with 6 N HCl or 4 N NaOH, respectively, in sealed vessels at 110 °C for 18 to 24 hours. Factors such as time, temperature, and reagents greatly impact the accuracy and precision of the hydrolysis reaction and thus, an expensive, tricky, and time-consuming laboratory procedure. Often, the hydrolysis reaction represents the rate-limiting step for this process. One approach to reduce the reaction time of an organic reaction is to replace conventional heating with microwave energy. Protein hydrolysis reactions can be successfully promoted with microwaves at higher temperatures and in shorter reaction times, compared to conventional heating methods. The Discover® 2.0 microwave reactor from CEM can provide laboratories with the tools to hydrolyze food samples in...
Over 100,000 systems sold worldwide.

CEM Corporation has been ISO 9001:2015 certified since 1994.

All systems serviced & supported by experts with an average of 15 years of experience.

CEM invests 12% of annual revenue into R&D, the result...
11 R&D 100 awards.

IQ/OQ/PQ Validation by certified CEM Technicians.

United States (Headquarters)
800-726-3331
704-821-7015
info@cem.com

France
33 (01) 69 35 57 80
info.fr@cem.com

Germany, Austria, Switzerland
(49) 2842-9644-0
info@cem.de

Ireland
+353 (0) 1 885 1752
info.ireland@cem.com

Italy
(+39)035896224
info.srl@cem.com

Japan
+81-3-5793-8542
info@cemjapan.co.jp

United Kingdom
(44) 1280-822873
info.uk@cem.com

For distributors in other regions, visit cem.com/contact

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