

Application Note - Digestion of Health Pills

Introduction:

This study evaluated the effectiveness of the *NOVAWAVE* microwave digestion system to digest food samples.

Sample Type:

Health pills

- Sample weight: 0.25-0.50 g
- 3 replicates

Supplies and Reagent:

- 1) Microwave Digestion System, *NOVAWAVE* SA Model*
- 2) Quartz Vessels, 75 ml, calibrated at 50ml*
- 3) Teflon® Caps and Safety Pressure Release Caps (pre-set release pressure 435psi) (or 30 bar)*
- 4) Nitric Acid, *PlasmaPURE* HNO₃ (70%)*
- 5) ICP-MS Spectrometer, ELAN 6100, Perkin-Elmer
- 6) Nebulizer*
- 7) Alumina Injector Torch, 1.2mm*
- 8) Cyclonic Spray Chamber, Baffled*
- 9) Graduated Cylinder, Corning
- 10) Volumetric flask, 100 ml

* Manufactured by SCP SCIENCE

Sample Preparation Procedure:

The samples were weighed on a 4 place analytical balance directly in the 75ml quartz vessels. After adding 10ml of HNO₃ and the appropriate spike, the samples were allowed to sit at room temperature for 5-10 minutes. The vessels were placed in the rack, capped and digested following the *NOVAWAVE* heating profile. At the end of the digestion, the solutions were clear and no particulates remain. After cooling to room temperature, the rack was vented carefully in a fumehood. The samples were normalized to 100 ml with deionized water in a volumetric flask and analyzed on the ICP-MS.

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NOVAWAVE
A new category of Automated Microwave Digestion

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NOVAWAVE Heating Program :

STAGE	RAMP TIME (Minutes)	PRESSURE (PSI – LIMIT)	TEMPERATURE °C	HOLD TIME (Minutes)
1	20	435	200	15

Recoveries:

Health Pill

El.	AMU	NOVAWAVE (PPM)	SPIKE (PPM)	NOVAWAVE SPIKE SAMPLE 1 (PPM)	NOVAWAVE SPIKE SAMPLE 2 (PPM)	NOVAWAVE SPIKE SAMPLE AVG (PPM)	RECOVERY (%)
As	75	0.0010	0.025	0.039	0.025	0.029	116
Cd	111	0.004	0.5	0.521	0.525	0.513	103
Hg	202	<0.0002	0.025	0.027	0.018	0.023	108
Pb	206	0.001	0.5	0.513	0.525	0.517	102

Conclusion:

The *NOVAWAVE* affords good results according to the spiked standard addition method. All recovery are within 80-120% of the spiked value.

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CANADA / USA

Tel.: (800) 361-6820

Fax: (800) 253-5549

FRANCE

Tel.: +33 (0) 1 69 18 71 17

Fax: +33 (0)1 60 92 05 67

INTERNATIONAL

Tel.: (514) 457-0701

Fax: (514) 457-4499

CHINA

Tel.: +86 (10) 58032301

Fax.: +86 (10) 58032302

BRAZIL

Tel: +55 19 8194-8488

www.scpscience.com
sales@scpscience.com