

Application Note - Digestion of Ali Powder

Introduction:

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

Sample Type:

Ali powder

- 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, *Plasma*PURE 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 75 ml 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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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:

Ali Powder

EI.	AMU	NOVAWAVE (PPM)	SPIKE (PPM)	NOVAWAVE SPIKE SAMPLE 1 (PPM)	NOVAWAVE SPIKE SAMPLE2 (PPM)	NOVAWAVE SPIKE SAMPLE AVG (PPM)	RECOVERY (%)
As	75	0.0015	0.025	0.040	0.046	0.043	112
Cd	111	0.003	0.5	0.499	0.509	0.504	100
Hg	202	0.005	0.025	0.025	0.033	0.029	96
Pb	206	0.011	0.5	0.526	0.514	0.520	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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