

Application Note XC1

Microwave Digestion of Bio-Hemp Face Cream

Summary

A sample preparation method to determine trace elements in bio-hemp face cream is introduced below. The face cream contains hempseed oil, vitamin E, glycerin, propane-1,2-diol and various other ingredients. The samples are digested using speedwave XPERT in high pressure DAK-100 vessels. During the digestion, the reaction temperature and pressure are controlled via contactless in-situ temperature sensor (DIRC) and pressure sensor (OPC) to ensure efficient digestion.

Instrumentation

	Rotor and Vessel Type	Liner Type	
Microwave Digestion	<input type="checkbox"/> DAP-40X		<input type="checkbox"/> MiniVessels
	<input type="checkbox"/> DAP-60X	<input type="checkbox"/> DAQ-20H	<input type="checkbox"/> MiniVessels
	<input type="checkbox"/> DAP-100X	<input type="checkbox"/> DAQ-22H	<input type="checkbox"/> DAC-17 <input type="checkbox"/> MiniVessels
	<input checked="" type="checkbox"/> DAK-100X		<input type="checkbox"/> MultiTube <input type="checkbox"/> MiniVessels

Procedure

Sample Amount	600 mg
Sample Preparation	The Bio-hemp face cream is purchased from drugstore, weighed and digested together within the TFM weighing cups.
Reagents ^[2]	10 ml HNO ₃ (65%)
Experiment	<p>Weigh sample into the vessel by using weighing cups. Add the reagent/s.</p> <p>Swirl the mixture carefully or stir with a clean PTFE or glass bar.</p> <p>Keep the vessel in the fume hood at least 10 minutes for pre-reaction.</p> <p>Seal and close the vessels as described in the operation manual.</p> <p>Start the digestion according to the following temperature program.</p> <p>Allow the vessels to cool down to room temperature and open them carefully as described in the operation manual. ^[1]</p> <p>Transfer the sample into centrifugal tubes and dilute them to a volume of 25 ml before analysis.</p>

Temperature Program ^[2]	Step	T [°C]	p [bar] ^[3]	Ramp [min]	Hold [min]	Power [%] ^[4]
	1	170	60	10	5	60
	2	200	60	5	30	70
	3	50	60	1	10	0

Results

Clear and colorless solutions.

Notes

- [1] To avoid foaming and splashing, wait until the vessels have cooled to room temperature (about 20 min). Carefully open the digestion vessel in a fume hood wearing hand, eye and body protection, since a large amount of fumes will be produced during the digestion process.
- [2] This application serves only as a guideline and may need to be optimized for your sample.
- [3] Pressure is the maximum value given to the program that is limited by the vessel and/or rupture disc specifications.
- [4] This application is outlined for 4 samples. Increase or decrease the power by 10% per sample, when using more or less sample. Minimum is 40% independent of the sample number.
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