

May 07, 2025

Lyophilized plant extraction for LC-MS Analysis

DOI

<https://dx.doi.org/10.17504/protocols.io.e6nvwe8zwvmk/v1>

Kateřina Kučerová¹

¹IOCB

Pluskal Lab



Kateřina Kučerová

IOCB

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.e6nvwe8zwvmk/v1>

Protocol Citation: Kateřina Kučerová 2025. Lyophilized plant extraction for LC-MS Analysis. **protocols.io**
<https://dx.doi.org/10.17504/protocols.io.e6nvwe8zwvmk/v1>

License: This is an open access protocol distributed under the terms of the **[Creative Commons Attribution License](#)**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

Created: April 21, 2025

Last Modified: May 07, 2025

Protocol Integer ID: 131014

Keywords: lyophilized plant extraction for lc, lyophilized plant extraction, extracting metabolite, lyophilized plant material, plant material for lc, extraction, ms analysis, transfer to lc, ms vial

Abstract

This protocol describes a rapid and efficient method for extracting metabolites from lyophilized plant material for LC-MS analysis. Samples are homogenized, extracted with ethanol–water, dried, and reconstituted in water–acetonitrile before final centrifugation and transfer to LC-MS vials. The method is optimized for small-scale use and ensures compatibility with LC-MS workflows.

Attachments



[Workflow.png](#)

86KB

Materials

Solvents

- EtOH-H₂O (75:25)
- H₂O-CH₃CN (50:50)

Experimental Supplies

- 2.0 ml Eppendorf tubes
- Stainless Steel grinding beads
- Dry ice

Labels

- For weighted material
- For the extracted material
- For LC-MS vials

Instruments

- Analytical balance
- TissueLyser
- Pipette (100–1000 µL) + tips
- Centrifuge
- Ultrasonic bath
- Vortex
- LC-MS system



- 1 Weight **25 ± 2.5 mg** of lyophilized plant material into a 2.0 Eppendorf tube with round bottom 20m
- 2 Add a metal bead to each tube 30s
- 3 Homogenize in TissueLyser **30 sec, 25 rpm** 30s
- 4 Add **2 000 µL** of EtOH-H₂O (75:25) and vortex to mix 10m
- 5 Incubate **3 min** at **40 °C** 3m
- 6 Homogenise in TissueLyser **60 sec, 25 rpm** 1m
- 7 Centrifuge **5 min, 14 000 rpm** 5m
- 8 Transfer **500 µL** of supernatant into a new 2.0 Eppendorf tube 20m
- 9 Dry in SpeedVac 3h
- 10 Resuspend in **2 000 µL** of H₂O-CH₃CN (50:50) 10m
- 11 Sonicate **15 sec** and vortex **30 sec** 10m
- 12 Centrifuge **5 min, 14 000 rpm** 5m



13 Transfer supernatant into LC-MS vials

20m