May 07, 2025

Lyophilized plant extraction for LC-MS Analysis

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

Kateřina Kučerová[1]

[1]IOCB

Pluskal Lab

K Kateřina Kučerová
IOCB

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

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

PNG

Workflow.png

86KB

Materials

Solvents

- EtOH-H_2O (75:25)
- H_2O-CH_3CN (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-H_2O (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 H_2O-CH_3CN (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