

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
22 May 2025 (22.05.2025)



(10) International Publication Number
WO 2025/106212 A1

(51) International Patent Classification:

CIIB 1/02 (2006.01) *G01N 19/00* (2006.01)
CIIB 1/10 (2006.01) *G01N 30/00* (2006.01)

LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE,
SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(21) International Application Number:

PCT/US2024/051738

Published:

— with international search report (Art. 21(3))

(22) International Filing Date:

17 October 2024 (17.10.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/548,338 13 November 2023 (13.11.2023) US

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(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST,
SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ,
RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT,

(54) Title: IMPROVED LIPID EXTRACTION

(57) Abstract: Provided herein are workflows to isolate both metabolites and lipids ("2in1"), or metabolites, lipids and proteins ("3in1"). The 2in1 methods comprise treating a sample containing metabolites and lipids with a mixture comprising methanol and ethanol, which precipitates proteins, adding water to increase metabolite recoveries, and passing the treated sample through a solid phase extraction (SPE) matrix which has an affinity for lipids. The flow-through from the SPE matrix contains metabolites, and lipids can be eluted from the SPE matrix with a lipid elution solution. The 3in1 methods are similar to the 2in1, but proteins are pelleted prior to SPE extraction, and it is the pellet that is then analyzed for proteins.



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