

TEMATICA 1

1. Metode de extracție a compusilor din materiale solide – metode conventionale și metode modern.
2. Clase de compuși conținute în extractele naturale (plante).
3. Tipuri de metode analitice aplicabile extractelor naturale și relevanța lor practică.

Bibliografie:

1. S. M. Jafari, S. Akhavan-Mahdavi [Extraction Processes in the Food Industry](#), Ed. Woodhead Publishing, 2023;
2. Mathews, A. Vasudeorao Arbal, A. Kaarunya, P. K. Jha, A. Le- Bail, A. Rawson; Chapter Five - Conventional vs modern extraction techniques in the food industry, Pag. 97-146;
<https://doi.org/10.1016/B978-0-12-819516-1.00013-2>;
3. J. Azmir, I.S.M. Zaidul, M.M. Rahman, K.M. Sharif, A. Mohamed, F. Sahena, M.H.A. Jahurul, K. Ghafoor, N.A.N. Norulaini, A.K.M. Omar. Techniques for extraction of bioactive compounds from plant materials: A review. *Journal of Food Engineering*, 2013, 117(4), 426–436.
<https://doi.org/10.1016/j.jfoodeng.2013.01.014>
4. J. C. Muoegbunam, V. E. Nwankwo, A. U. Onwuzuligbo, B. O. Umeokoli, C. C. Abba, F. B. C. Okoye, K. G. Ngwoke, A review of nature's pharmacy: Unveiling the sources, classes and therapeutic potentials of natural products in drug discovery, *GSC Biological and Pharmaceutical Sciences*, 2025, 30(03), 053-063; <https://doi.org/10.30574/gscbps.2025.30.3.0075>;
5. S. Sasidharan, Y. Chen, D. Saravanan, K. M. Sundram, L.Y. Latha. Extraction, isolation and characterization of bioactive compounds from plants' extracts. *African Journal of Traditional, Complementary and Alternative Medicines*, 2011, 8(1), 1–10. <https://doi.org/10.4314/ajtcam.v8i1.60483>

TOPIC 1

1. Methods for Extracting Compounds from Solid Materials – conventional extraction methods and modern extraction techniques.
2. Classes of Compounds Present in Natural Extracts (Plants).
3. Types of Analytical Methods Applicable to Natural Extracts and Their Practical Relevance.

Bibliography:

1. S. M. Jafari, S. Akhavan-Mahdavi [Extraction Processes in the Food Industry](#), Ed. Woodhead Publishing, 2023;
2. Mathews, A. Vasudeorao Arbal, A. Kaarunya, P. K. Jha, A. Le- Bail, A. Rawson; Chapter Five - Conventional vs modern extraction techniques in the food industry, Pag. 97-146;
<https://doi.org/10.1016/B978-0-12-819516-1.00013-2>;
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4. J. C. Muoegbunam, V. E. Nwankwo, A. U. Onwuzuligbo, B. O. Umeokoli, C. C. Abba, F. B. C. Okoye, K. G. Ngwoke, A review of nature's pharmacy: Unveiling the sources, classes and therapeutic potentials of natural products in drug discovery, *GSC Biological and Pharmaceutical Sciences*, 2025, 30(03), 053-063; <https://doi.org/10.30574/gscbps.2025.30.3.0075>;
5. S. Sasidharan, Y. Chen, D. Saravanan, K. M. Sundram, L.Y. Latha. Extraction, isolation and characterization of bioactive compounds from plants' extracts. *African Journal of Traditional, Complementary and Alternative Medicines*, 2011, 8(1), 1–10. <https://doi.org/10.4314/ajtcam.v8i1.60483>

TEMATICA 2

1. **Sinteze de compuși organofosforici cu minimizarea impactului asupra mediului și aliniere la obiectivele de dezvoltare durabilă**
2. **Obținerea de compuși organofosforici noi cu aplicații în biomedicină**
3. **Rețele metal organice cu aplicabilitate multifuncțională: catalizatori și materiale adsorbante**

Bibliografie:

1. Nenitescu CD. Chimie organică. Vol. I-II. București: Editura Didactică și Pedagogică; 1980.
2. Rojas S, Horcajada P. Metal–organic frameworks for the removal of emerging organic contaminants in water. *Chem Rev.* 2020;120(16):8378-8415, <https://doi.org/10.1021/acs.chemrev.9b00797>.
3. Clarke CJ, Tu WC, Levers O, Bröhl A, Hallett JP. Green and sustainable solvents in chemical processes. *Chem Soc Rev.* 2018;47(1):283-303, <https://doi.org/10.1039/C7CS00571A>
4. Pogany I, Banciu M. Metode fizice în chimia organică. București: Editura Științifică; 1972.
5. Visa A, Maranescu B, Plesu N, Popa A. Green alternative approaches to the synthesis of the metal–organic frameworks. In: Demadis KD, editor. *Phosphonate Chemistry, Technology and Applications*. Amsterdam: Elsevier; 2026. p. 55-72. <https://doi.org/10.1016/B978-0-443-44447-0.00009-9>

TOPIC 2

1. **Synthesis of organophosphorus compounds with minimized environmental impact and alignment with sustainable development goals**
2. **Obtaining new organophosphorus compounds with applications in biomedicine**
3. **Metal-organic frameworks with multifunctional applications: catalysts and adsorbent materials**

Bibliography:

1. Nenitescu CD. Chimie organică. Vol. I-II. București: Editura Didactică și Pedagogică; 1980.
2. Rojas S, Horcajada P. Metal–organic frameworks for the removal of emerging organic contaminants in water. *Chem Rev.* 2020;120(16):8378-8415, <https://doi.org/10.1021/acs.chemrev.9b00797>.
3. Clarke CJ, Tu WC, Levers O, Bröhl A, Hallett JP. Green and sustainable solvents in chemical processes. *Chem Soc Rev.* 2018;47(1):283-303, <https://doi.org/10.1039/C7CS00571A> .
4. Pogany I, Banciu M. Metode fizice în chimia organică. București: Editura Științifică; 1972.
5. Visa A, Maranescu B, Plesu N, Popa A. Green alternative approaches to the synthesis of the metal–organic frameworks. In: Demadis KD, editor. *Phosphonate Chemistry, Technology and Applications*. Amsterdam: Elsevier; 2026. p. 55-72. <https://doi.org/10.1016/B978-0-443-44447-0.00009-9>.