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P35. Miniaturized Solid Phase Extraction Techniques Applied to Natural Products: A Review

Rosendo L.M.[1,2], Brinca A.T.[1,2], Pires B.[1,2], Catarro G.[1,2], Rosado T.[1,2], Martinho J.P.[1], Guiné R.P.F.[3], Araújo A.R.T.S.[4,5], Anjos O.[6,7,8], Gallardo E.[1,2]

[1]*Centro de Investigação em Ciências da Saúde, Faculdade de Ciências da Saúde da Universidade da Beira Interior (CICS-UBI), Covilhã, Portugal*
[2]*Laboratório de Fármaco-Toxicologia-UBIMedical, Universidade da Beira Interior, Covilhã, Portugal*
[3]*CERNAS Research Centre, Department of Food Industry, Polytechnic Institute of Viseu, 3504-510 Viseu, Portugal*
[4]*CPIRN-IPG, Centro de Potencial e Inovação de Recursos Naturais, Instituto Politécnico da Guarda, 6300-559 Guarda, Portugal*
[5]LAQV, REQUIMTE, Departamento de Ciências Químicas, Faculdade de Farmácia, Universidade do Porto, 55142 Porto, Portugal
[6]CERNAS-IPCB (Centro de Estudos em Recursos Naturais, Ambiente e Sociedade), Instituto Politécnico de Castelo Branco, 6001-909 Castelo Branco, Portugal
[7]*Centro de Biotecnologia de plantas da Beira Interior, 6001-909 Castelo Branco, Portugal*
[8]*Centro de Estudos Florestais (CEF), Laboratório Associado TERRA, Instituto Superior de Agronomia, Universidade de Lisboa, 1349-017 Lisboa, Portugal.*
Email: joao.pedro.martinho@ubi.pt

Natural products are increasingly becoming part of our daily lives through their use in industry, food, as therapeutic agents, etc. Different techniques may be used to characterize natural products, including microextraction techniques. This work intends to review the most used solid-based miniaturized sample preparation techniques applied to determining compounds in natural products. Advantages and drawbacks are also presented. A systematic literature search was performed involving three electronic databases: Medline, ISI Web of Knowledge, and Google Scholar. The search considered papers published from 2015 to the present, with exceptions based on the specific method used (the criteria for the search were extended to 2011 due to the low number of publications). The review's findings and discussion revealed that HS-SPME is the most commonly used approach (37.0%) for natural compound analysis due to its "green" characteristics, including solvent-free extraction and sustainability. However, methods using molecularly imprinted polymers for solid-phase extraction (14.8%) and stir bar sorptive extraction (18.5%) are gaining popularity, possibly due to their speed and simplicity. There has been a great deal of attention concerning developing modified sorbents, such as multi-walled carbon nanotubes and MIPs, probably due to their high selectivity.
Chromatographic instruments such as HPLC and GC are preferred (48.1%), and the most common detectors are UV/visible detectors (20.5%) and mass spectrometry (44.9%), respectively.
However, one of the main challenges of using those approaches is obtaining pure and well-characterized materials, as well as the fact that they are not commercially available, which poses a problem to laboratories and industry.

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