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Modern solutions in the field of microextraction using liquid as a medium of extraction

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Highlights

1. LPME is a solvent-minimized sample preparation procedure of LLE.
2. LPME techniques can be coupled with such identification techniques as GC, HPLC, CE.
3. The most popular techniques belonging to LPME are SDME, HF-LPME, DLLME.
4. LPME techniques offers many advantages.
5. LPME techniques are widely applied to samples with matrix complexity.

Abstract

The monitoring of compounds present in samples at trace/ultra-trace level usually requires a preliminary step of isolation and/or enrichment of analytes. Against, sample preparation is considered as crucial part of whole analytical procedures, in particular in samples characterized by complex matrices composition. Several new miniaturized extraction techniques is introduced and extensively applied to different type of samples. Here you can highlight solid phase microextraction (SPME) and liquid phase microextraction (LPME). LPME was introduced to overcome drawbacks of liquid liquid extraction (LLE). Based on the recently published literature data, this review provides an update of the most important features and application of LPME. Comparison of these techniques have been made. Moreover, application of different type of LPME techniques for the extraction of different kind of materials such as biological, environmental, pharmaceutical and food was summarized.

Keywords: Liquid phase microextraction; green analytical chemistry; single drop microextraction; hollow-fiber liquid phase microextraction; dispersive liquid-liquid microextraction

1. Introduction

Determination of target compounds in representative samples of materials, especially these characterized by complex composition of the matrix is not an easy task. Suitable procedures includes many steps, which most important are sample preparation which may