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## NEW TRENDS IN SAMPLE PREPARATION FOR FOOD ANALYSIS

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Foodstuffs are complex mixtures of volatile, inorganic and organic components at very different concentration levels. Food chemical characterisation consequently requires the analysis of a variety of macromolecules such as proteins, macronutrients like carbohydrates and lipids, natural bioactive components such as polyphenols, aroma and flavour components, inorganic micronutrients and organometallic compounds, as well as undesirable residues of other small molecules introduced during production, processing, storage and/or transport of food, including contaminants, i.e. plasticizers, pesticides, persistent organic pollutants, veterinary drugs, and toxins. The different nature and volatility of these analytes determine the instrumentation used for final determination. However, unless the concentration level is high enough and the separation-plus-detection highly selective, analytical protocols in use for the analysis of all these food components typically involve several previous treatments for extraction, isolation and concentration of the target compounds before instrumental determination. In most instances, similar sample preparation techniques are used almost irrespective of the target analyte. This tutorial aims to give an overview of modern analytical techniques in use for the analysis of organic components in (semi-)solid foodstuffs with special attention on the analysis of residual compounds regulated by current legislations. The feasibility of approaches based on miniaturisation and hyphenation of the several treatments involved in these determinations at the low levels typically found in real-life food samples will be demonstrated through representative examples.