SAMPLE PREPARATION TECHNIQUES FOR FOOD ANALYSIS

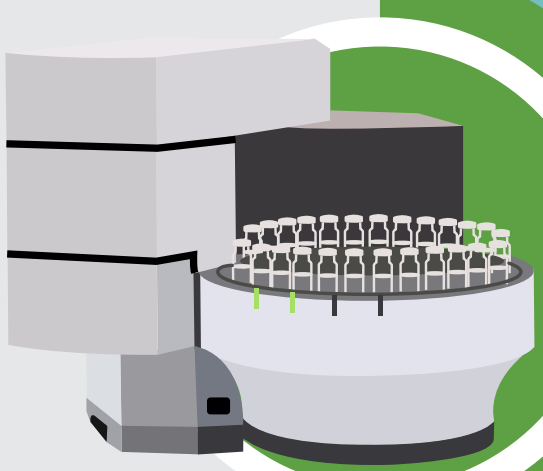
Food is a very challenging matrix for chromatography, so sample preparation is an important step in food analysis. Choosing the right sample prep technique is crucial to achieving the required accuracy and precision. Here are the most popular sample preparation techniques available for analyzing a wide range of food samples and the benefits of each.

QuEChERS

Complex food matrices require selective extraction and extensive cleanup to ensure accurate quantitation of trace-level contaminants. That's why many food testing labs use QuEChERS (Quick Easy Cheap Effective Rugged and Safe) as their sample preparation method. QuEChERS provides fast, simple extraction and cleanup for a wide range of food testing needs. It's often used for the analysis of trace-level pesticides in complex food matrices like baby food.

HEADSPACE

Headspace GC (gas chromatography using headspace sampling) provides accurate analysis of a wide range of volatile compounds. This method achieves highly sensitive analysis without the need for complex pretreatment. Common food applications include the analysis of residual solvents in food packaging materials and flavor components in alcoholic beverages.

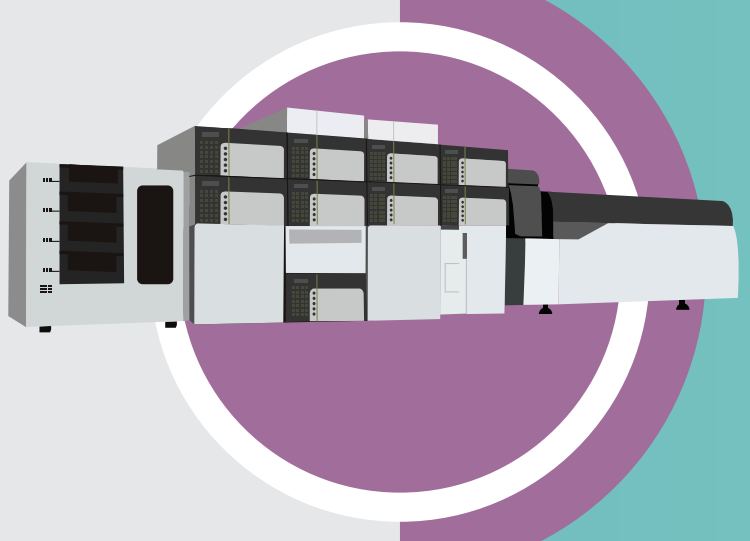


SOLID PHASE EXTRACTION

Solid phase extraction (SPE) can be used to isolate entire classes of compounds from a food sample. Another benefit of using SPE is that it enables trace analysis. This means that the sample can be concentrated to ensure detection at very low levels. For example, SPE is ideal for analyzing low levels of per- and polyfluoroalkyl substances (PFAS) in food. Other applications include analyzing veterinary drugs in meat and allergens in thermally processed foods.

SUPERCRITICAL FLUID EXTRACTION

Sample preparation for conventional LCMS and GCMS typically takes 35 minutes and requires several manual steps. With an online supercritical fluid extraction (SFE)/supercritical fluid chromatography (SFC) system, the same sample can be ready for analysis in as little as five minutes with only a few simple steps. The process is fully automated, from online sample preparation to analysis. Even labile compounds can be analyzed without degradation, e.g., fat-soluble vitamins in fish.



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