

## Emerging Hyphenated and Comprehensive Multi-Dimensional Techniques for the Measurement of POPs in Food.

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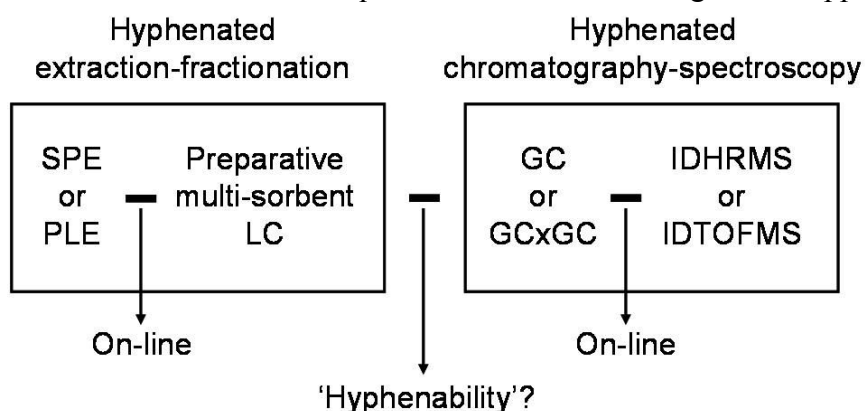
### KEY WORDS

Sample clean-up; On-line coupling; Hyphenated; Comprehensive; SPE; PLE; GCxGC; MS

### ABSTRACT

Hyphenated analytical techniques are strictly defined as the on-line coupling between a “slow” separation technique and a “rapid” spectroscopic detection technique (e.g. GC-MS). Separation techniques themselves can result from on-line coupling (“hyphenation”) of basic separation procedures (e.g. extraction, chromatography...). Basic chromatographic techniques can also be coupled and the comprehensiveness of such a multi(two)-dimensional chromatographic technique is achieved when the entire sample is subjected to the whole separation process under orthogonality and conservation rules [1]. The multiplex sign is then used instead of the hyphen sign to designate such a chromatographic displacement. The efficiency of the symbiotic relation between analytical techniques depends upon the degree of orthogonality, or the degree of independence of the retention mechanisms in the various dimensions.

Because a rather selective bio-accumulation of POPs occurs in biological samples, their analysis is usually less demanding in terms of separation power than for environmental samples that can virtually contain all compounds. Nevertheless, the measurement of POPs in biological samples is challenging and concern dozens of analytes. Hyphenated and comprehensive multi-dimensional techniques find here a stimulating area of application.



We report on our latest developments in the coupling and hyphenation of sample preparation techniques as well as separation and detection techniques for the measurement of selected POPs in foodstuffs of animal origin.

**Reference:** [1] J.C. Giddings. *Anal. Chem.* **1984**, *56*, 1258A-1270A.