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Maximization of the chromatographic information in green tea fingerprinting

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Obtaining useful information about the chemical composition of samples containing multiple components still is a great challenge for analysts. One approach to the analysis of very complex samples of which there are no standards is by obtaining fingerprints, for which several chromatographic techniques are useful. In this work, we use high performance liquid chromatography. A chromatographic fingerprint is just a chromatogram that shows multiple peaks of different heights corresponding to the components of the samples. Samples with similar fingerprints possess similar nature and probably a common origin. Therefore, fingerprints show potential interest to determine the identity, authenticity and consistency between batches of medicinal herbs. An ideal assessment for fingerprint quality should include the number of visible peaks and their resolution. In this work, a strategy is reported to measure the level of information through the concept of peak prominence, developed in our laboratory. Peak measurements are ranked and the results are used to summarize the information level in the fingerprint, obtaining a numerical evaluation. Fractional factorial designs were performed to measure the impact of several extraction conditions (e.g. solvent nature and composition, temperature, time of extraction, time and temperature of storage, etc.), by processing the chromatograms of the extracts. The gradient program was optimized to maximize the chemical information. The methodology was applied to green tea samples.

Biography

Tamara Alvarez-Segura obtained her degree in Chemistry and Master in Experimental Techniques in Chemistry at the University of Valencia in 2013 and 2014, respectively. She is currently performing diverse research activities in the Department of Analytical Chemistry to complete her PhD. During her Master studies she began her collaboration with the FUSCHROM group in the field of the modulation of the selectivity in HPLC using serially-coupled columns to analyze complex samples. She has also experience in the industrial field, where her work in Polymer Char (a leading instrumentation company fully devoted to the characterization of polyolefins) should be highlighted.

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