B031 Influence of plant matrix on microwave-assisted extraction process. The case of diosgenin extracted from fenugreek (*Trigonella foenum-graecum* L.).

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Diosgenin, a steroidal sapogenin occurring in fenugreek (*Trigonella foenum-graecum* L., Fabaceae) is distributed in all plant organs.The effect of experimental parameters on microwave-assisted extraction process of this compound was studied.

Due to the number of variables involved in the extraction process, a chemometric approach was selected, which allowed to study the effect of each parameter as well as their interactions. The same experimental scheme was applied to the different plant parts, including air-dried leaves, seeds, fresh leaves and air-dried roots. The three selected parameters were the extraction time, the composition of the extracting solvent (mixture of water and 2-propanol) and the microwave power applied. The amount of solid sample (granulometry < 220 µm), as well as the solvent volume were fixed. Quantification of diosgenin was made by GC-MS.

It was demonstrated that diosgenin extraction from seeds was mainly influenced by the microwave power applied. Optimal conditions for seeds were 30 min, 58 % water, 40 W. In the case of leaves, a microwave power of 40 W during 8 min, with a high proportion of water in the extracting mixture (58 %) was found beneficial. On the other hand, roots required drastic conditions, i.e. long extraction time (24 min), high water proportion (60 %) and high power setting (40 W), probably because of the lignification of this matrix.

Finally, on the basis of a second-order model, optimal conditions were determined for each matrix. The prediction quality of the models was experimentally verified by performing extractions in triplicate for each matrix at the determined optimal conditions. Comparison was made between the experimental and the predicted responses, and results were found to be identical.

In contrast to classical univariate methodology, chemometrics allowed a significant gain in terms of time and reliability with a limited number of experiments.

B032 Headspace solid-phase microextraction combined with gas chromatography-mass spectrometry: a new method for tracing cannabis profiles

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This work describes the application of headspace solid-phase microextraction (HS-SPME) combined with gas chromatography-mass spectrometry (GC-MS) to the analysis of different cannabis materials. Without any preliminary sample preparation prior to the analysis, the whole plant material (marijuana) and resin (hashish) from different origins were directly submitted to HS-SPME in order to obtain a chromatographic profile of cannabinoids. Target analytes were the three major cannabinoids, cannabidiol (CBD), Δ^9-tetrahydrocannabinol (Δ^9-THC) and cannabinol (CBN). The efficiency in cannabinoid sampling of some commercially available microextraction fibers (100 µm PDMS, PDMS/DVB, CAR/PDMS, 1 cm length DVB/CAR/PDMS) was evaluated after optimization of experimental parameters. Sampling was thus performed at 80°C for 2 hours and the fiber was then desorbed at 280°C for 12 minutes. The 100 µm PDMS fiber was found to be the most effective for this application. Under these conditions it was also possible to detect other cannabinoids in some samples. Method repeatability was finally evaluated and provided acceptable results.

This simple, rapid and repeatable method gives characterizing chromatographic profiles and can be applied to identify the quality and the origin of cannabis samples.