Immediate Differentiation of Unusual Seed Oils by Easy Ambient Sonic-Spray Ionization Mass Spectrometry


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**Abstract**

We describe herein the immediate and low cost characterization of nine seed oils via TAGs profiles by EASI-MS.

**Introduction**

Here we show that EASI(+)-MS offers indeed a powerful immediate tool able to characterize and differentiate unusual seed oils obtained from *Jatropha curcas* (JC), *Bombacopsis glabra* (BG), *Capparis flexuosa* (CF), *Siparuna guianensis* (SG), *Moringa oleifera* (MO), *Hibiscus tiliaceus* (HT), *Virola bicuhyba* (VB), *Pouteria caimito* (PC) and *Syagrus coronate* (SC). The oils were found to display quite contrasting TAG profiles, which provide important information for their quality control and potential applications in biofuels and foods.

**Results and Discussion**

Oils were extracted by the Soxhlet method from 5g of ground seeds using 230 mL of ethyl ether heated at 65°C for 4 h. The crude samples (2 μL) were dropped on a paper surface and EASI-MS data were acquired in a single quadrupole for over 30 s, initially scanning over the range of m/z 200-1200. The EASI source in house-fabricated was operated with methanol flow rate of 20 μL min⁻¹ and 3 L min⁻¹ for the nebulizing gas (N₂). Fig. 1 shows, as an example, the EASI(+)-MS distinct profiles of TAGs from V. bicuhyba and S. coronata.

**Table 1.** [TAG + Na]⁺ ions and relative abundance (%) detected via EASI(+)-MS for the oils.

Note that all oils display predominance of TAG composed by palmitic (P), oleic (O), stearic (S) and linoleic (L) acids. But two exceptions were found for the V. bicuhyba and S. coronata seed oils, which are composed mainly by TAG containing lauric acid (La). To evaluate the performance of the EASI-MS technique to discriminate the different types of vegetable oils in terms of their TAG profiles, PCA and HCA were applied.

**Conclusions**

EASI(+)-MS profiles of TAGs constituents provide immediate typification and differentiation of oils and can be obtained in a quite direct and rapid fashion.

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