

Analysis of anti-diabetic compounds in herbal extracts via HPTLC-enzyme inhibition assay, followed by HRMS

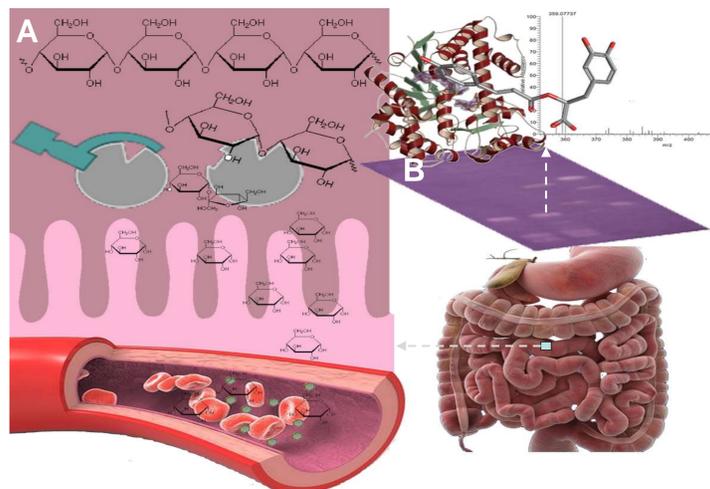


Fig. 1 Scheme of α -glucosidase function in the digestive system (A) and planar α -glucosidase assay (B)

Highlights

- The inhibitors of α -glucosidase prevent the digestion of carbohydrates, hence, reducing the blood sugar [1-3]; botanicals have been a promising source for the development of new anti-diabetic medicines.
- ✓ HPTLC in direct combination with enzymatic inhibition (EI) followed by HRMS is instrumentally simple and powerful in visual interpretation, if compared to conventional approaches [4-5] → HPTLC-EI-HRMS provided the characterization of unknown glucosidase inhibitors in a high number of botanicals
- ✓ Quantitative biodensitograms enabled the bio-equivalency calculation of inhibitors in a matrix-rich sample → gain in information by bio-equivalency values
- ✓ Rapid method taking 3.5 min per sample (20 samples in parallel) allows characterization of α -glucosidase inhibitors in a high number of botanical extracts.

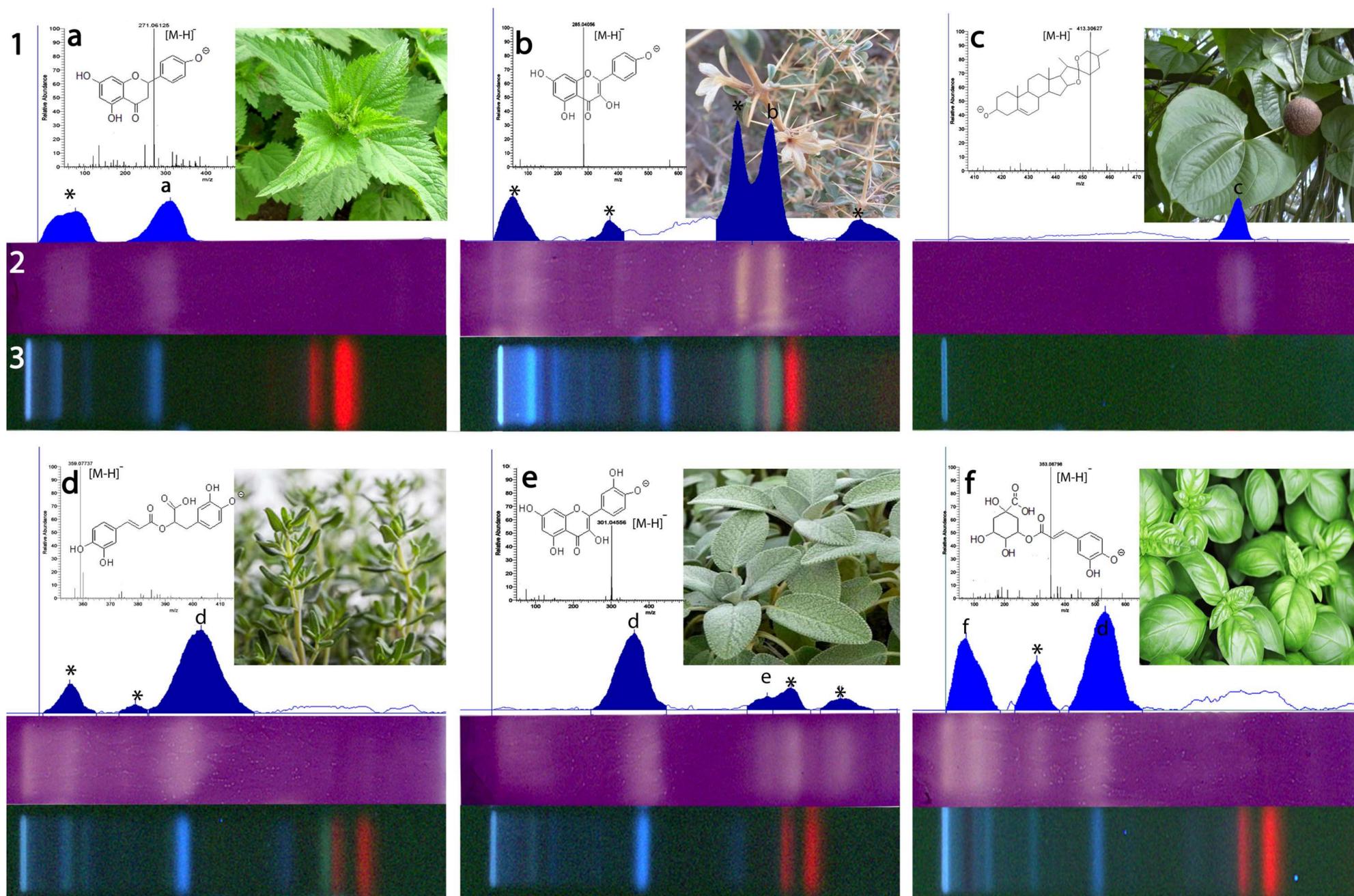


Fig. 2 Biodensitograms of botanicals extracts (1) recorded from bioautograms (2) by inverse scanning and compared to HPTLC chromatograms at UV 366 nm (3); discovered inhibition zones a-f were eluted into the HRMS system via an elution head-based interface.

References

- [1] S.E. Kahn *et al.* Lancet 383 (2014) 1068 [2] W. Singh L. J Med Plants Res 5 (2011) 667 [3] A. Rezaei *et al.* J Ethnopharmacol 175 (2015) 567 [4] S. Hage, G.E. Morlock J Chromatogr A 1490 (2017) 201 [5] M. Jamshidi-Aidji, G.E. Morlock Anal Chem 88 (2016) 10979

