

Detection of capsinoids by ESI-mass analysis

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INTRODUCTION

Capsaicinoids are the compounds responsible of the pungency in pepper fruits (*Capsicum* spp) and exhibit several healthy effects (Reyes-Escogido et al. 2011), however, their use is limited due to pungency. Another capsaicinoid-like substances, named **CAPSINOIDS**, have been discovered in pepper fruit extracts (Yazawa et al. 1989). Chemical structure and biologic activity of capsinoids are almost the same as the capsaicinoids unlike pungency. As it happens with the capsaicinoids, pepper fruits may contain others capsinoids not yet described. Therefore is important develop new analytical techniques more accurate for determining minor compounds such as capsinoids.

OBJECTIVE

Optimization of a mass spectrometry method that allows accurate m/z measurements of capsinoid ions and their product ions and the characterization of the fragmentation patterns of capsiate and dihydrocapsiate.

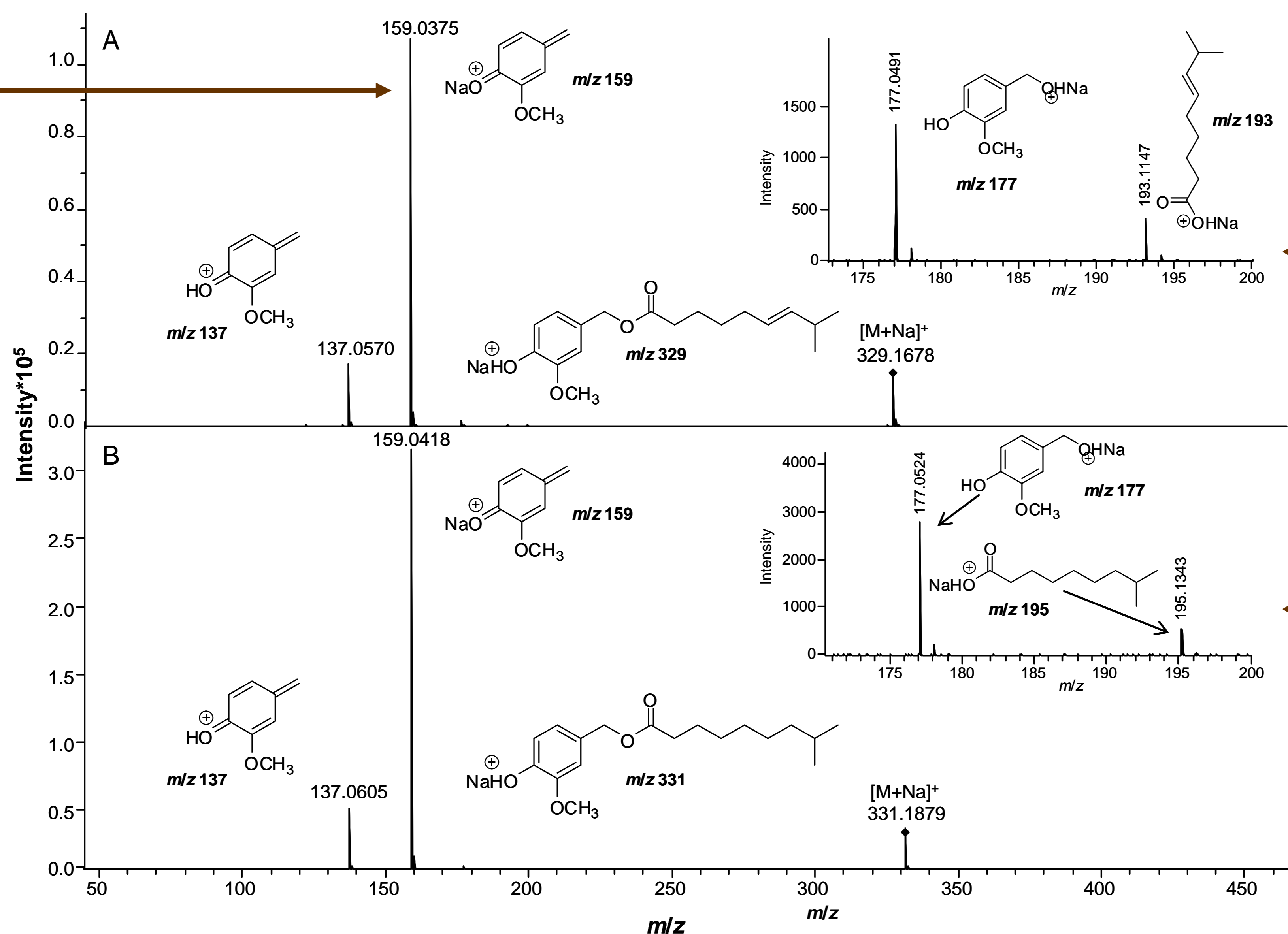
RESULTS

ESI-MS² (QTOF) analysis (positive ion mode) and ESI-MSⁿ (Ion trap) analysis (positive mode) were used

PROPOSED FRAGMENTATION PATTERNS FOR CAPSIATE (A) AND DIHYDROCAPSIATE (B)

The most intense product ion was observed at m/z 159.0 corresponding to the sodiated vanillyl ring shared by all capsinoids

The product ions at m/z 137.1 and 177.1 corresponding to different fragmentations of the sodiated vanillyl ring



Product ions at m/z 193.1 and 195.1, for capsiate and dihydrocapsiate, respectively, indicated the acyl chain residues

The major peaks observed were the $[M + Na]^+$ molecular ions at the m/z 329 and 331, corresponding to sodiated capsiate and dihydrocapsiate molecules, respectively

CONCLUSION

This study opens the possibility of applying ESI-MS(QTOF) analyses to identify potential unknown capsinoids in pepper fruit extracts and also to confirm the identification of the three known capsinoids in vegetable matrices.

The fragmentation patterns obtained supply valuable information for further characterization of unknown capsinoid-type compounds.

ESI-MS² spectra of capsiate (A) and dihydrocapsiate (B) obtained on the QTOF mass spectrometer in positive ion mode.

REFERENCES: Reyes-Escogido M.L., Gonzalez-Mondragon E.G., Vazquez-Tzompantzi E. 2011. Chemical and pharmacological aspects of capsaicin. *Molecules*, vol. 16: 1253-1270.

Yazawa S., Suetome N., Okamoto K., Namiki T.J. 1989. Nordihydrocapsiate, a new capsinoid from the fruits of a nonpungent pepper, *Capsicum annum*. *J. Japan Soc. Hort. Sci.*, vol. 58: 601-607

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