International Journal of Environmental Analytical Chemistry ›
Volume 91, 2011 - Issue 14

Original Articles

Analytical study on ethephon residue determination in water by ion-pairing liquid chromatography/tandem mass spectrometry

Cristina Ripollés, José M. Marín, Juan V. Sancho, Francisco J. López & Félix Hernández

Pages 1380-1391 | Received 25 May 2010, Accepted 27 Aug 2010, Published online: 21 Oct 2011

Cite this article https://doi.org/10.1080/03067319.2010.520131

Abstract

A detailed analytical study on ethephon residue determination in water, making use of ion-pairing liquid chromatography coupled to electrospray tandem mass spectrometry (LC/MS/MS), has been carried out. Ethephon is a plant growth regulator, highly polar, which is typically present in aqueous solution in anionic form due to its acid character. Both its ...atographic retentio... ...en tested includin... ...ase extracti... ...off-line SPE, usin... ...ting several ion-pair... ...is was added t... ...matographic retentio... ...h the evaluation of their relative intensity ratios allowed the reliable confirmation of the

analyte in samples. The optimised approach was tested in low-salinity water spiked at 0.1 µg L^{-1} level with satisfactory recovery, and a limit of detection of 0.02 µg L^{-1}. To this purpose, the water sample was partially de-ionised in an initial stage, in order to remove major ions that would have interfered in analyses. The application of this methodology to more saline/complex water samples, as surface or wastewater, was problematic and a thorough optimisation of the de-ionisation conditions would be required.

Keywords: ethephon | ion-pairing liquid chromatography | tandem mass spectrometry | tetrabuthylammonium, water analysis

Acknowledgements

This work has been developed under financial support of the Ministry of Education and Science, Spain (CTM2006-06417). The authors acknowledge the financial support of Generalitat Valenciana, as research group of excellence PROMETEO/2009/054. C. Ripollés is very grateful to the Ministry of Education and Science for her pre-doctoral grant.