



## **Application of Liquid Chromatography/tandem Mass Spectrometry to pesticide residue determination in l'Albufera lake (Valencia, Spain)**

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Wetlands are the Earth's most dynamic and diverse ecosystems, providing a wide array of important ecological functions and values, being reserve and habitat for flora and fauna. Among them the coastal ones are those that suffer the most intense aggressions, mainly derived from human pressure (unsustainable exploitation, industrial and urban development, pollution, etc.). The pollution threat on wetlands includes both chemical effects of eutrophication and the physical effect of reducing the penetration of light into surface waters.

However, despite the growing awareness of the values and benefits from wetlands, wetland loss and degradation continues in European countries. As an example, according to the European Environment Agency (EEA), an estimated two-thirds of Europe's coastal wetlands have disappeared in the past century, and the loss continues. Nowadays, the coastal strip in many European countries is the fastest growing area, in terms of social and economic development. This phenomenon is more emphasized in the Mediterranean.

To measure the level of pollution by agricultural practices in these areas, the determination of pesticides, in water, soils and sediments can be taken as fairly adequate reference. To achieve this task the selection of precise, accurate and reliable methods of extraction and analysis is needed. In this work, solvent extraction together with liq-

uid chromatography/tandem mass spectrometry (LC MS/MS) have been applied for the analysis of sixteen pesticides in natural waters, soils and sediments of a Mediterranean coastal wetland (The Albufera lake, Valencia, Spain). The proposed methodology has shown to be reliable, sensitive and having a low sample amount requirement in compliance with the international regulatory policies.

From the studied pesticides, imazalil and atrazine were detected in a water sample obtained from a channel near l'Albufera, at concentrations of  $0.30 \mu\text{g l}^{-1}$  and  $0.32 \mu\text{g l}^{-1}$ , respectively. Imazalil was found in four samples with a maximum concentration of  $1.55 \mu\text{g l}^{-1}$ . This systemic imidazole fungicide is used to control a wide range of fungi on fruit and vegetables. Diazinon was found in two samples with a maximum concentration of  $0.04 \mu\text{g l}^{-1}$ . Diazinon is one of the organophosphorus insecticides used in rice paddy fields and oranges trees. Atrazine, buprofezin and diuron were also found.

Some of these pesticides were also found in soil and sediment samples at different concentrations according with its different distribution coefficients and its location in the area.

The Albufera Lake has a great ecological value being declared Natural Park and included in the list of wetlands of international importance of the Ramsar Convention and in the Nature 2000 Network. The occurrence of these pesticides is a clear indicator of the degree of anthropic impact that this area suffers.

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