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A portable chip for microextraction and subsequent optical detection in a single step: Determination of norfloxacin in water samples

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In recent years, the miniaturization of new methodologies has become a dominant trend due to the advantages they present. On the one hand, microextraction techniques integrated into microfluidic devices on the chip have been able to be connected online to instrumental techniques for direct analysis. The development of new detection devices using optical fibers allows measuring new compounds more quickly and requiring less sample volume.

In this work, we present for the first time the coupling between two miniaturized systems: a microextraction microchip device bases liquid phase microextraction and an optical detection device using optical fibers (fluorescence), allowing on-line determination in a single portable device using a very low sample volume. The first step was a clean-up sample treatment and the extraction of the analyte (norfloxacin), whereas the second step was the direct determination of norfloxacin using optical fibers. The microextraction procedure was carried out at optimal extraction conditions (dihexilether as an organic solvent, pH 3 as the sample solution, pH 12 as acceptor solution and 1 μ L/min as flow rate for sample and acceptor solution). Finally, the device has been successfully applied to environmental samples.

Biography

Maria Ramos Payan has expertise in improving sample preparation techniques focused on microfluidic-chip devices as miniaturization. The novelty of her microfluidic devices offers more advantages than the existing methodologies. Maria has worked at different institutions (the University of Seville, University of Huelva, University of Lund, University of Copenhagen, University of North Carolina, USA, Microelectronic National Center of Barcelona and Universitat Autònoma de Barcelona). Currently, she works at the University of Seville with the aim of implementing optical detection into microfluidic devices for multiple different applications.

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