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Alternative Methods To Detect Pesticides, Antibiotics In Water, Natural Food

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Water or food of natural origins (from plants or animals) that we consume on a daily basis can contain unwanted 'supplies' for our organism, such as **pesticides** or antibiotics.

A doctoral thesis carried out by Jorge Juan Soto Chinchilla, from the Department of Analytical Chemistry at the University of Granada (Universidad de Granada), and directed by professors Ana María García Campaña and Laura Gámiz Gracia, proposes new analysis methods for the detection of pesticide residue (carbamates) and antibiotic residue (sulfonamides) in water, plant foods and food of animal origin (milk and meats from varied sources). These new methods constitute a routine analysis alternative to the analysis used until now.

Research forms part of several projects financed by the Spanish National Institute for Agrarian and Alimentary Research (INIA) and the Ministry of Education and Science, in collaboration with the company Puleva Biotech.

The main goal of the work "New analytical methodologies, under quality criteria, for the determination of pharmaceutical residues in waters and food", carried out by the research group "Quality in Food, Environmental and Clinical Analytical Chemistry (FQM-302)", has been to develop new methods to detect residues in food of these contaminants below the Maximum Residue Levels (MRL) established by the European Union, in order to guarantee the quality of the product and permit its distribution and consumption. Researchers point out, regarding water, that "the interest caused by control of residue levels of pesticides, which can be found in water as a result of treatment of crops with such compounds, is widely known. "However, concern on detecting pharmaceutical residue, specifically antibiotic, is quite recent. The presence of these contaminants in fresh waters can cause a certain bacterial resistance or allergic reactions in the consuming population.

Innovative techniques

In order to achieve this, the study carried out by the UGR used techniques that have not been much explored in these fields. Cathodoluminiscence detection (CL) connected to Flow Injection Analysis (FIA) and High Performance Liquid Chromatography (HPCL), or Capillary Electrophoresis (CE) with UV/Vis detection using an online preconcentration technique in the capillary itself, or detection via Mass

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