CONSTRUCTION AND APPLICATION OF SOLID AMALGAM ELECTRODES FOR THE PESTICIDE DETERMINATION IN FRESH FOODS SAMPLES

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The crescent utilization of pesticides in agricultural techniques has resulted in an increasing contamination of foods. Conventional detection methods, such as HPLC, GC and others, are rather complex and usually require a well-equipped central laboratory. Electroanalytical techniques have become increasingly more attractive for the control of pesticides in natural food matrices since they are cheap, fast and, frequently, involve little or no sample manipulation. Moreover, they can be used in remote systems if properly designed. The aim of this work is to show the applicability of solid amalgam electrodes as a suitable sensor to detection pesticides residues in fresh foods samples. After experimental and voltammetric optimization considering the atrazine, ametryne, diquat, ziram, thiram and dimethomorphe pesticides, the analytical parameters such as: linearity range, equation of the analytical curves, correlation coefficients, detection and quantification limits, recovery efficiency, and relative standard deviation were evaluated for each pesticide. The results showed that, in all cases, the quantification limits values were lower than the maximum limit of residue established by the Brazilian Environmental Agency. Besides, the recovery efficiencies in fresh food samples showed values from 70 to 130%, demonstrating that the proposed electroanalytical procedure is very suitable for determining any contamination by pesticides in different samples. Thus, the good sensitivity and the economy resulting from not samples preparations steps indicates that the solid amalgam electrodes can be considered an environmentally friendly tool and a very interesting alternative for pesticides detection in fresh foods samples.