ELECTROANALYTICAL PROCEDURE TO CHLOROTALONIL PESTICIDE DETERMINATION

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Chlorothalonil (2,4,5,6-tetrachloro-isophtalonitrile) belongs to the group of halogenated benzonitriles which is one the most widely used fungicides in tropical fruits cultures. It is considered as a probable human carcinogen, so their maximum limit of residues is established by the Brazilian Environmental Agency. Chlorothalonil determination in foods matrices is usually carried out by gas chromatography. However, electrochemical techniques can be been used in such determinations as an excellent alternative method. This work reports the utilization of the silver solid amalgam electrode (AgSAE) in the development of an analytical procedure for the analytical determination of the Chlorothalonil fungicide in juices of tropical fruits, such as: orange, lemon, apple, pineapple, watermelon and melon. The square wave voltammetry technique was used and the experimental and voltammetric parameters were optimised as: Brinton-Robinson buffer (pH 7.0), frequency of 100 s⁻¹, amplitude of 50 mV and potential increment of 2 mV. A study about the influence of the addition of the surfactants indicated that the use of the CTAB, in micelar critical concentration, minimized the adsorption on the pesticide in electrodic surface, improving the reproducibility in the experiments and the analytical sensibility. Analytical curves were constructed and the detection and quantification limits were determined as DL = 3Sb/s and QL = 10Sb/s, respectively, where Sb is the standard deviation of 10 blank measurements and s is the analytical sensibility. The reproducibility and repeatability were evaluated as less than 2.0%. Recovery efficiencies in all samples showed values from 70% to 130%, allowing the analysis in complex samples, such as tropical fruits juices.