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Investigation of carbonyl group containing fungicide residues in murrayakoenegii fruit pulp by using carbon nanotubes paste electrodes dopped with silver nanoparticals

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Abstract
This investigation is to estimate the amount of fungicides present in murrayakoenegii fruit pulp samples by applying adsorptive stripping voltammetry by reducing carbonyl group present in one of the component present in applied fungicide. universal buffer with pH range 4.0 to 6.0 used as supporting electrolyte.Average amounts for ten replicates recorded.effect of scan rate and pH on electrode process were optimised . Errors are reduced and accuracy is enhanced.
Key words:murrayakoenegii fruit pulp,adsorptive stripping voltammetry,carbon nanotubes paste electrodes dopped with silver nano particals

Introduction

Fungicides are pesticides that kill or prevent the growth of fungi and their spores. They can be used to control fungi that damage plants, including rusts, mildews and blights. They might also be used to control mold and mildew in other settings. Fungicides work in a variety of ways, but most of them damage fungal cell membranes or interfere with energy production within fungal cells.

The objective of this effort is to highlight the persistence of fungicide residue in vegitable matter by employing a sensitive method voltammetry by using a working electrode with increased sensitivity.

Instruments

Electro analytical determinationsconducted using a model meterohm Auto Lab 101 PG stat (Netherlands)(fig:2.0). Carbon nano tubes paste electrodes dopped with silver nanoparticles used as working electrode for differential pulse adsorptive stripping voltammetry and cyclic voltammetry. pH measurements were carried out with an Eutech PC_510 cyber scan. Meltzer Toledo (Japan) Xp26 delta range micro balancer

were used to weigh the samples during the preparation of standard solutions. All the experiments were performed at 25^0C

Reagents

All reagents used are analytical reagent grade. Double distilled water was used throughout the analysis. In the present investigation universal buffers of pH 4.0 was used as supporting electrolytes and are prepared by using 0.2 M boric acid, 0.05M citric acid and 0.1Mtrisodium orthophosphate solutions.

Measurementsand calculations

In this standard addition method, the voltammogram of the unknown is first recorded after which a known volume of standard solution of the same electro active species is added to the cell and second voltammogram is taken(fig:3.0). From the magnitude of the peak height, the unknown concentration of species may be calculated using the following equations.

$$\text{C (un known)} = \frac{C_s\, xV}{V_t\, x i_2}\, x\, i_1$$

Result And Discussions

Well resolvable and reproducible peak obtained for each sample is useful for the analysis of water samples. The optimum pH to get well defined peak for the detection is found to be 5.0. The peak current is found to vary linearly with the concentration of the pesticide over the range 1.01 x 10^{-5}M to 1.03 x 10^{-9}M. The lower detection was limit found to be 1.02 x 10^{-9}M. The correlation coefficient and relative standard deviation (for 10 replicates) obtained using the above procedure [1-7].

Recovery experiments

A stock solution (1.0 x 10^{-3} M) of each pulp sample is prepared in dimethyl formamide. In voltammetric cell, 1 mL of standard solution is taken and 9 mL of the supporting electrolyte (pH 5.0) is added to it. Then the solution is deaerated with nitrogen gas for 10 min. after obtaining the voltammogram, small additions of standard solution are added and the voltammograms are recorded under similar experimental conditions. The optimum conditions for analytical estimation at pH 5.0 are found to be, applied potential of -0.35V and scan rate 60 $mVs.^{-1}$.recovery for real sample is 91.66%. result in corporated in table 1.0

Fruit samples (fig 1.0) are collected from curry leave fields which sprayed by the fungicides under investigation 48 hours after spraying . These samples extracted and were filtered through a Whatman No.41 filter paper and Aliquots of samples were taken in a 25mL graduated tube, to it buffer solution was added and analyzed as described above. The recoveries of fungicide content obtained in pulp samples ranged from 47.00 to 59% and the results are summarized in Table 1.0.

Table 1.0: Recoveries of fungicide in fruit pulp samplescarbon nanotubes pasteelectrodesdopped with silver nanoparticals

Name of the pesticide	Amount added (mg/L)	Amount found (mg/L)	*Recovery (%)	Standard deviation
1.carbendazim(reference)	3.0	2.75	91.66	0.07
2.carbendazim(real)	3.0	1.36	59.00	0.05

fig 1.0 murraya fruits

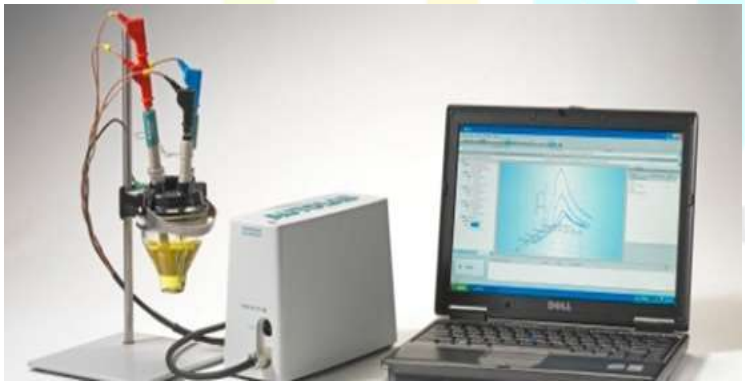

fig 2.0 Meterohm Auto Lab 101 PG stat

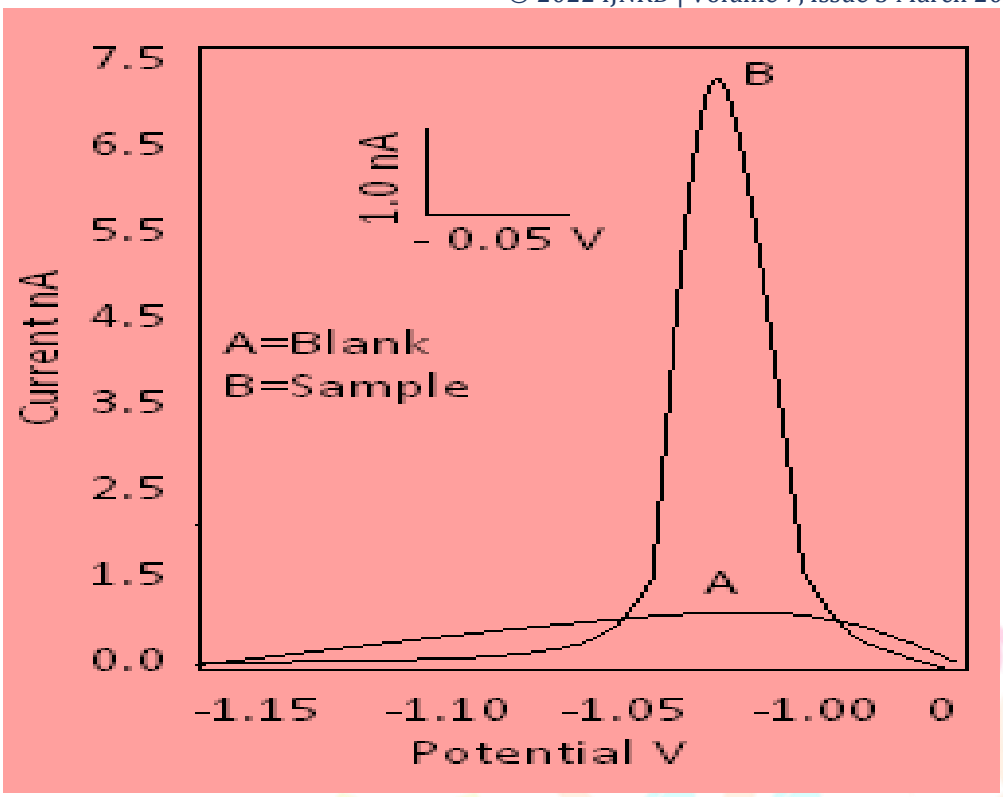

fig 3.0 voltamogram

Conclusions

In this attempt carbon nano tubes paste electrodes dopped with silver nanoparticles used as working electrode for improved sensitivity.statistical parameters for the determination of pesticide residues satisfactory applied to interpret the instrumental out puts without considerable errors. And during the estimations pollution arises due to heavy metal electrodes such as mercury electrodes is avoided by using carbon electrodes.

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