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Investigation of Pesticidal Remainings in Environmental Matricies

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Abstract- Determination of pesticidal recidues was made in this approach. To determine the persistence of pesticides with various activities present in environmental samples electro chemical techniques such as adsorptive stripping voltammetry, cyclic volatametry was applied. Carbon nano tubes paste electrode was used as working electrode. Average amounts for ten replicates founded by using standard addition method. Statistical concepts such as standard deviation and correlation coefficient successfully applied for calculations. In all the findings in this approach all the possible errors are minimised and accuracy is maximised. Water samples of a variety of areas collected and investigated for pesticide residues before and after the application of pesticides.

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Investigation of Pesticidal Remainings in Environmental Matricies

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I. Introduction

When residual pesticides get into the environment they can remain poisonous and active for many years. If applied incorrectly or used in the wrong place, these chemicals may spread to other land areas and possibly to the water supply. There are good reasons (advantage spesticides are very effective. This means that nearly all the target pests which come in contact with these pesticides are killed Results are quick. This means the pests are killed within a very short time.

Using pesticides can be an economical (cheap) way of controlling pests. Pesticides can be applied quickly and there is not the high labour cost which might apply to other methods of control, such as removing weeds by hand [1-7].

If pesticides are not used correctly, they can affect human health or cause serious injury or death to the pesticide operator, other people or household pets. Pesticides can also directly affect other non-target animals. For example, a gardener spraying his garden to kill caterpillars will probably also kill harmless lady bird beetles and praying mantises. If pesticides are used incorrectly or applied wrongly, they may find their way into places where they are not wanted, for example, they might be washed into rivers or into the soil. In this article an elctroanalytical method voltammetry supported by statistical findings was applied.

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a) Apparatus and chemicals

Electro analytical investigations performed with a model meterohm Auto Lab 101 PG stat (Netherlands). Carbon nano tubes paste electrodes used as working electrode for determinations. pH measurements 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 used are analytical reagent grade. Double distilled water was used entire the analysis. In the present investigation universal buffer of pH 4.0 was used as supporting electrolyte.

b) Outcome and deliberations

Single Well resolvable and reproducible peak obtained for every sample is useful for the analysis of water samples. The optimum pH to get well defined peak for the detection is found to be 4.0. The peak current is found to vary linearly with the concentration of the pesticide over the range 1.03×10^{-5}M to 1.06×10^{-9}M. The lower detection was limit found to be 1.07×10^{-9}M. The correlation coefficient and relative standard deviation (for 10 replicates) obtained using the above procedure [8-15].

c) Recovery experlments

A stock solution (1.0×10^{-3} M) of each sample is prepared in dimethyl formamide. In voltammetric cell, 1 mL of standard solution is taken and 9 mL of the supporting electrolyte (pH 4.0) is added to it. Then the solution is de aerated 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 4.0 are found to be pulse amplitude of 25 mV, applied potential of -0.35V and scan rate 40 $mVs.^{-1}$.

Water samples are collected from paddy fields which sprayed by the pesticides under investigation 48 hours after spraying the pesticides. These samples were filtered through a Whatman No.41 filter paper and Aliquots of water samples were taken in a 25mL graduated tube, to it buffer solution was added and analyzed as described above. The recoveries of samples obtained in water samples ranged from 51.00 to 57.00% and the results are summarized in Table 1.0.

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Table 1.0: Recoveries of pesticides in water samples

Name of the pesticide	Amount added (mg/L)	Amount found (mg/L)	*Recovery (%)	Standard deviation
1. valone	8.0	4.15	51.75	0.04
2. monalid	8.0	4.36	54.50	0.07
3. Fentrieanil	8.0	4.31	53.87	0.12
4. Dinosam	8.0	4.25	53.25	0.07
5. crotametone	8.0	4.10	51.25	0.05
6. flurethrin	8.0	4.18	52.25	0.06
7. dinitramine	8.0	4.22	52.75	0.05
8. oxabetrinill	8.0	4.26	53.25	0.03

**Average of 10 replicates*

II. Conclusions

In this paper voltammetry for the determination of pesticide residues satisfactory applied to detect residual pesticides 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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