

ESTIMATION OF ENDOSULFAN INSECTICIDE RESIDUES IN PADDY OF KRISHNA DISTRICT

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ABSTRACT

The World Health Organization estimated worldwide annual production Endosulfan to be about 9,000 metric tonnes (t) in the early 1980s.[11] From 1980–89, worldwide consumption averaged 10,500 t per year, and for the 1990s use increased to 12,800 t per year. Endosulfan is a derivative of hexachlorocyclopentadiene and is chemically similar to aldrin, chlordane, and heptachlor. The rapid use of Endosulfan causes so many health problems. These residues in agricultural products like vegetables, rice may cause health problems. In Andhra Pradesh Krishna district is famous in cultivation of paddy. By HPLC method, Endosulfan residues identified in paddy samples.

Keywords: Endosulfan, paddy, HPLC, C₁₈ column

INTRODUCTION

A paddy field is a flooded parcel of arable land used for growing rice and other semiaquatic crops. Paddy fields are a typical feature of rice farming in east, south and southeast Asia. India has the largest paddy output in the world and is also the second largest exporter of rice in the world. Paddy fields are a common sight throughout India, be they be northern gangetic plains or southern peninsular plateaus. Paddy is cultivated at least twice a year in most parts of India, the two seasons being known as Rabi and Kharif respectively¹⁻⁷.

Endosulfan is an off-patent organochlorine insecticide and acaricide. This colourless solid has emerged as a highly controversial agricultural chemical due to its acute toxicity, potential for bioaccumulation, and role as an endocrine disruptor. Endosulfan has been used in agriculture around the world to control insect pests including whiteflies, aphids, leafhoppers, Colorado potato beetles and cabbage worms. Because of its unique mode of action, it is useful in resistance management; however, because it is non-specific, it can negatively

impact populations of beneficial insects⁸⁻⁹. It is, however, considered to be moderately toxic to honey bees, and it is less toxic to bees than organophosphate insecticides.

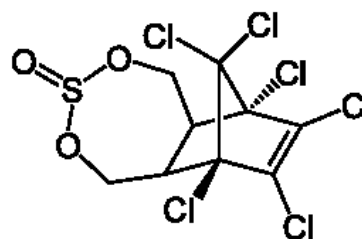


Fig.1: Chemical Structure of Endosulfan

MATERIALS AND METHODS

Chemicals and Reagents

Methanol, H.P.L.C water were purchased from Merck Specialities pvt.Ltd, C₁₈ Column chromasil make

Instrumentation

Shumatzu H.P.LC with U.V detector and isocratic elution.

Sample preparation

2 grams of Paddy was taken in beaker and added 5 ml n-hexane, stirred vigorously. After filtration sample boiled on water bath up to complete evaporate of n-hexane. Finally dry residues obtained. To the residues 1 ml of mobile phase added.

CHROMATOGRAPHIC CONDITIONS

Mobile phase is Methanol 70%, water 30%. PH adjusted to 6.4 with ortho phosphoric acid. Detector wave length 214 nm, flow 1 ml/min.⁴

RESULT AND DISCUSSION

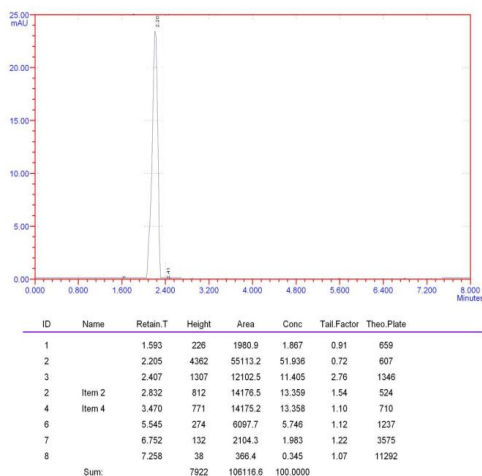


Table 1

S. No.	Place in Krishna dist	% of Endosulfan in paddy
1	GUDIWADA	0.6
2	MACHILIPATNAM	1.8
3	TIRUVURU	0.52
4	NUZEVEEDU	1.2
5	NANDIGAMA	0.76

From our studies we identified Endosulfan residues in paddy throughout Krishna District. The higher amount identified in Machilipatnam region.

CONCLUSION

From this study we observed Endosulfan residues in every area with different

concentrations. It is very hazard condition to the human health.. Recently The KARNATAKA government also banned this chemical Endosulfan. It should need in our state also.

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