



MONOCROTOPHOS USES AND DISADVANTAGES IMPACT ON SOCIETY

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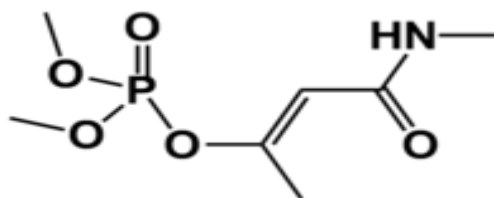
ABSTRACT

Monocrotophos is a member insecticide organophosphorus compound, it is an important insecticide and has a diversified role in agriculture. In India is one of the major players in the agriculture sector worldwide and it is the approx. 55% of India's population. India has the largest area planted for wheat, rice, and cotton, and is the largest producer of milk, pulses, and spices in the world. It is the second-largest producer of fruit, vegetables, tea, farmed fish, cotton, sugarcane, wheat, rice, cotton, and sugar. The agriculture sector in India holds the record for second-largest agricultural land in the world generating employment for about half of the country's population. The organophosphorus insecticide Monocrotophos play an important role in agriculture.

Key words: Monocrotophos, Agriculture, uses, Disadvantages.

INTRODUCTION

Monocrotophos [(E)-dimethyl-1-methyl-3- (methylamino)-3-oxo-1-propenyl phosphate (9Cl); dimethyl phosphate ester with (E)-3-hydroxy- N-methyl crotonamide (8 Cl)], trade names include Monocrotophos and Azodrin, is a broad-spectrum organophosphate insecticide, acaricide, and termiticide against gall midge, cutworms, corn rootworms, cockroaches, leaf folder, and leaf hopper, etc ¹. Approximately 30,000 tons of Monocrotophos is used annually. As per data's Asia is the top user of Monocrotophos as; India (43%), South America (26%), China (15%), and Southeast Asia (9%) account for 90% of the use, internationally. In India Andhra Pradesh and Punjab are the chief consumers of Monocrotophos ². Easy availability of this compound is frequently encountered in forensic casework, since organophosphorus insecticides compounds are frequently misused in homicidal, accidental, and suicidal poisoning cases in year 2015³, The chemical structure of monocrotophos below.



The Detection and identification monocrotophos in help of Instrumental methods such as spectrophotometry⁴, LC-MS/MS⁵, High performance liquid chromatography (HPLC)⁶⁻⁸, gas chromatography (GC) ⁹⁻¹² and GC-MS ¹³⁻¹⁸. are reported in the literature for the determination of monocrotophos in Pesticide Residues in Vegetables. Although these methods are selective, there are limitations to their use in routine forensic work. Reason to their

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complex matrix which may damage the columns. And therefore, high-performance thin layer chromatography (HPTLC) is the method of choice for screening biological sample due to its speed, low cost, and versatility. Several chromogenic reagents reported example such as Mercurous nitrate¹⁹, potassium iodate-starch²⁰, sodium carbonate-chloranil in acetone²¹, mercuric nitrate diphenyl carbazone²², palladium chloride²³, vanillin reagent²⁴, benzyl reagent²⁵, methanolic ferric chloride²⁶, 50% potassium iodate in 1:1 ethanol-hcl²⁷, Cupric acetate²⁸⁻²⁹, organometallic reagent³⁰ and chloranil reagent³¹ etc. Our research group previously reported some chromogenic reagent for detection of insecticides by thin-layer chromatography in continuation of our research³²⁻³³.

Wide Uses

This study reports Insecticide their wide uses. Broad-spectrum, fast-acting, contact and systemic organophosphate. Used to control a wide range of pests, including sucking, chewing and boring insects such as aphids, caterpillars, bollworm, mites, moths, jessed, budworm, scale, stem borer, and locusts. In India, most use is on cotton, rice, pulses, groundnuts, vegetables (especially tomato and brinjal/ aubergine) and fruits (especially mango and grapes), also chilies, cardamom, coconut, coffee, tea, castor, citrus, olives, maize, sorghum, sugar cane, sugar beet, pea, potatoes, soybeans, cabbage, mustard, onion, pepper, ornamentals and tobacco.

Disadvantage

The wide uses in agriculture are shown some disadvantages such as conclude that monocrotophos is insecticide in India and having high toxicity level for living beings especially to birds. Monocrotophos cause the histopathological, genotoxic, acute, hyperglycemic and stressogenic effects and significant dermal exposure with an impact on cholinesterase, genotoxicity and cardiotoxicity activities.

Results and Discussion

Exposure to Monocrotophos can cause rapid, severe, organophosphate poisoning with headache, dizziness, blurred vision, tightness in the chest, sweating, nausea and vomiting, diarrhea, muscle twitching, convulsions, coma and death. In India we seen monocrotophos was used to deliberate Suicides, Accidental deaths cases sent toxicology department in forensic science laboratories for further instrumental analysis.

Conclusions

In this paper we generally seen the uses and the disadvantages of monocrotophos organophosphorus insecticide role in India, Monocrotophos show novel role in agriculture used but due to some hazardous impacts are also very important to show in Society.

In agriculture, a wide range of Organophosphorus compounds has been employed to boost crop yield, quality, and storage life. However, due to the ever-increasing population and rapid urbanization, pesticide use has grown in recent years. These compounds are exceedingly poisonous to humans, so many poisoning cases occurred.

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