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AMETRYNE RESIDUES IN FRESH WATER FISHES

BY

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SUMMARY

A total of 75 fish flesh samples; 25 each of Clarias lazera, Bagrus bayad and Tilapia nilotica were collected during the application of Ametryne as a herbicide for Nelumbo (Nile-Lily) in the River Nile channels.

The collected samples were examined for Ametryne residue by using Gas Chromatography. The mean levels of Ametryne residues in Clarias lazera, Bagrus bayad and Tilapia nilotica were 43, 33, 36 ng/gram fish flesh respectively. The level of Ametryne in Clarias lazera is higher as compared with Tilapia nilotica and Bagrus bayad. The source of contamination to fresh water fishes was discussed.

INTRODUCTION

Ametryne is a pre-and post emergency herbicide as general and a selective use that is considered the most suitable chemical for controlling broad leaves such as Nelumbo (Nile-Lily) in Egypt. The stability of Ametryne in aqueous solutions in light and on soil was reported by U. S. Environ. Prot. Agency Office of Drinking Water Health, Advisories, 1989.

The potential use for its selective application has a wide interest to crop growers (Wassa, 1983 and Bardalaye and Wheeler, 1984) and surface water (Storet, 1988).

Experimental inoculation with different ways by Ametryne in lab. animals to detect its health effects was reported (Sachsse and Bath, 1976; Sachsse and Ulmann, 1977 and Ceglowski et. al., 1979).

The extensive use of Ametryne in water channels in Egypt to control the growth of Nelumbo (Nile-Lily) affects the fish lives there. Therefore, this investigation was carried out to determine the Ametryne residues in a live fish in the River Nile.

MATERIAL AND METHODS

A total of 75 fish flesh samples, 25 each of Clarias lazera, Bagrus bayad and Tilapia nilotica, were collected during the application of Ametryne as a herbicide for Nelumbo in the River Nile channels. The collected samples were transferred in an ice box to the laboratory for examination.

Experimental technique

The technique of Bardalaye and Wheeler (1984) for *Gas Chromatographic determination of Ametryne was applied.

10 grams of dorsal muscles of fish samples were homogenized with anhydrous Sod. sulphate and ethyl acetate toluene (3:1).

The extract was concentrated to desired volume by using the rotary evaporator at 35-40 °C.

RESULTS AND DISCUSSION

The results obtained during this study indicated that Ametryne could be detected in all fish samples examined. Ametryne residues (ng/gram) ranged from 20 to 60 with mean value 43 for

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Clarias lazera samples, and 10 to 50 with mean value 33 for Bagrus bayad while in Tilapia nilotica, ranged between 10 to 70 ng/gram with mean value 36 ng/gram (Table 1).

The frequency distribution of Ametryne level in fish samples showed that all of examined Clarias lazera and Bagrus bayad exceeded 10 ng/gram in fish flesh while 92% of examined Tilapia nilotica exceeded such a level (Table 2).

No available data concerning Ametryne residues in fish flesh. U. S. E.P.A has established residue tolerances for Ametryne in or on raw agricultural commodities that range from 0.1 to 0.5 ppm (CFR, 1985). The mean residue of Ametryne level is higher in Clarias lazera (43 ng/gram) as compared with that of Tilapia nilotica (36/gram) and Bagrus bayad (33 ng/gram).

In this respect, Storet (1988) determined

Table (1):Ametryne residues in fish flesh ng / gram.

Type of fish	No. of samples examined	Positive samples		Min.	Max.	Mean
		Number	%			
Clarias lazera	25	25	100	20	60	43
Bagrus bayad	25	25	100	10	50	33
Tilapia nilotica	25	25	100	10	70	36

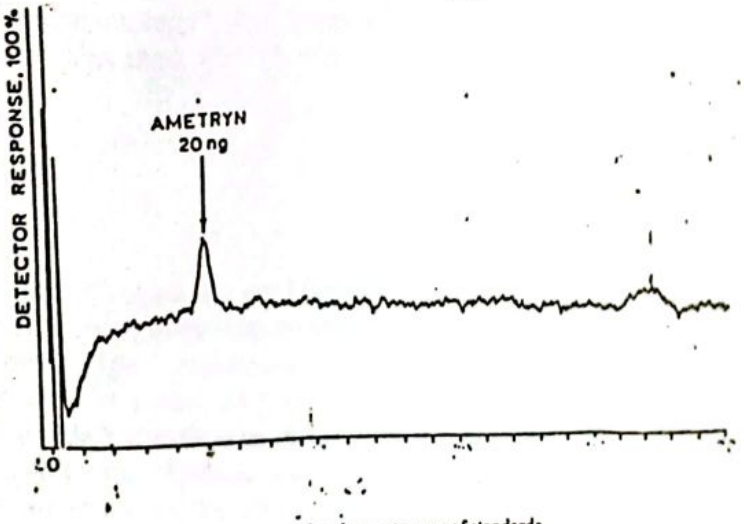
Eight percent and 4% of examined Clarias lazera and Tilapia nilotica showed a level which exceeded 50 ng/gram fish flesh while nothing of the examined Bagrus bayad exceeded such a level (Table 2).

Ametryne in surface water with maximum concentration of 0.1 ug/litre. This residue could be a source of Ametryne contamination occuring in fish. The excessive use of Ametryne may lead to accumulated effect in fish flesh. Individual fishes

Table (2): Frequency distribution of Ametryne residues in fish flesh according to their level ng/gram.

Frequency	No. of samples examined	Clarias lazera		Bagrus bayad		Tilapia nilotica	
		No.	%	No.	%	No.	%
> 10	25	25	100	25	100	23	92
>20	25	23	92	18	72	18	72
>30	25	19	76	9	36	12	48
>40	25	14	56	6	24	9	36
>50	25	2	8	0	0	1	4
>60	25	0	0	0	0	1	4
>70	25	0	0	0	0	0	0

examined, contained residues of Ametryne in quantities dependant on the species of fish. High level in Clarias lazera could be, to some extent justified by the way of nutrition and the fat content of that species of fish. Clarias lazera is a bottom feeder, as it mostly feeds on plankton from the bottom water.



the chromatogram of standards,

Mout (1962) stated that the swallowing is the primary root of pesticide intake while others credit the gills with being the primary pathway of pesticide entry (Holden, 1962).

No information was found in the available literature on the health hazards on Ametryne in humans or on its carcinogenic significance.

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