

PESTICIDE RESIDUES IN FOODSTUFFS

Part I. A Note on the Survey of Vegetables for Pesticide Residues

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INTRODUCTION

A variety of pesticide chemicals are available in the market for the control of insect pests attacking vegetables and other crops in Pakistan.

As each crop is susceptible to attack by more than one pest, it is usually treated with several pesticides before harvest. While pesticides have contributed greatly to the high quality of food and increase in yield of agricultural crops, they have at the same time given rise to the problem of residues which man or animal are liable to eat with consequential hazard. It is, therefore, essential that information be made available on residue levels which are present in different crops.

Keeping this in view and as part of our investigation on this aspect, the data presented herein deals with survey of vegetables for organochlorine pesticides around Karachi. The survey was conducted during May – July, 1981.

EXPERIMENTAL

Fresh vegetables were procured from the market. 30 gm. of each kind of vegetable were cut into small pieces and homogenised in a high speed blender and processed for extraction, clean-up and gas chromatographic determination according to procedures described. These procedures were shown to give 90-95% recovery of organochlorine pesticides from vegetables

RESULTS

Twelve samples of different vegetables were examined for organochlorine pesticides particularly for gamma BHC.

It is evident from Table – 1 that out of 12 samples of vegetables examined, only three were found to contain pesticide residues. Cabbage contained 0.05 ppm of PP' DDT

and 0.15 ppm DDE which is a non-toxic metabolite of DDT. Lady's finger and cauliflower samples contained 0.2 and 0.008 ppm of gamma-BHC respectively. Nine samples of vegetables as mentioned in the above Table did not contain any pesticide residues. Gas chromatography of cleaned up extracts cabbage, lady's finger and cauliflower are presented in Fig. 1.

In Pakistan, organochlorine pesticides have not been approved for use on vegetables. Since BHC and DDT are manufactured locally, they are readily and economically PP' DDT, DDE, Endrin, Aldrin and Dieldrin and results are presented in the following table:

Table 1. Organochlorine pesticide residues in vegetables.

S.No.	Vegetable	Residues present	ppm found
1.	Tomato	Nil	—
2.	Spinach	Nil	—
3.	Bringal	Nil	—
4.	Pumpkin	Nil	—
5.	Cabbage	PP' DDT, DDE	PP' DDT-0.05 ppm DDE-0.15 ppm
6.	Sugarbeet	Nil	—
7.	Lady's Finger	Gamma-BHC	0.2
8.	Cauliflower	BHC	0.008
9.	Onion	Nil	—
10.	Potato	Nil	—
11.	Cucumber	Nil	—
12.	Gourd	Nil	—

available to the farmers who use it on vegetable and other crops for protection against pest attack.

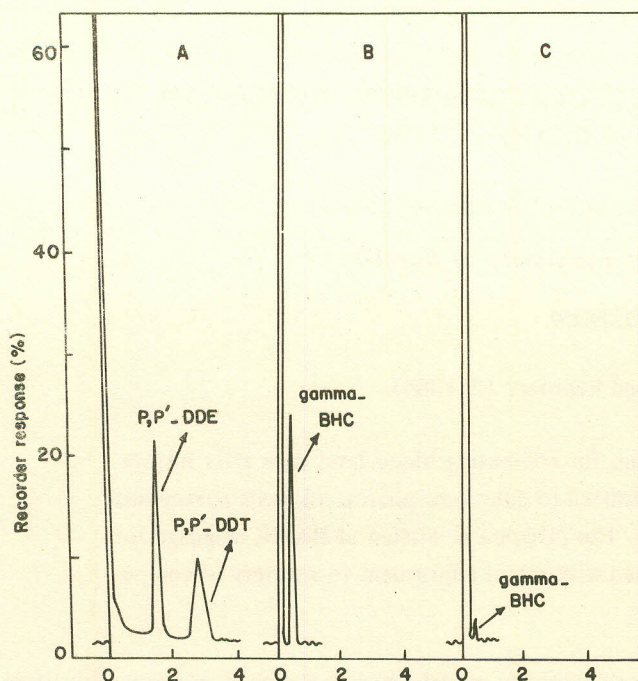


Fig. 1. Gas chromatograms of A-Cabbage, B-Lady's finger and C-Cauliflower.

It is, therefore, desirable that regular monitoring of food commodities be done for pesticide residues and on the basis of results achieved, the farmer should be cautioned against the use of organochlorine pesticides in view of

their inherent health hazards.

REFERENCES

1. D.C. Abbot, S. Crisp, K.R. Tarrant and J.O.'G. Tatton. *Pesticide Sci.*, **1**, 10, (1970).
2. H. Egan, D.C. Homes, J. Roburn, J.O.'G. Tatton. *J. Sci. Fd. Agri.*, **17**, 563 (1966).
3. *Evaluations of Some Pesticide Residues in Food*. (FAO/WHO, Rome 1970), pp. 543-557.
4. F.A. Gunther, Advances in Analytical Detection of Pesticides. In *Scientific Aspects of Pest Control*, 1402 Nat. Acad. Sci., Nat. Res. Council, Washington, D.C., (1966), pp. 276-302.
5. Harold Egan and Ralph E. Weston, *Pesticide Science* **8**, 110 (1977).
6. E.G. Hill and R.H. Thompson, *J. Sci. Food Agr.*, **19**, 119 (1968).
7. S.Z. Masud, Under publication in *Pakistan Agr. Res.* (1982).
8. *Organochlorine Compounds (Report of the Government Chemist, London) (1970-71)*, pp. 16.
9. *Organochlorine Compounds (Report of the Government Chemist, London) (1974-75)*, pp. 15.
10. R.H. Thompson, E.G. Hill and F.B. Fishwick, *Pesticide Science*, **1**, 93, (1970).