

Analysis of toxic effect of pesticides on vegetables

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Abstract

Pesticides are synthetic chemical used for pest control. Pesticide is the general term for insecticides, rodenticides, molluscides, herbicides, fungicides. At present there are more than 10,000 different pesticides. Accumulation of these pesticides in vital organs such as livers, kidney, lungs and blood causes histopathological changes and carcinogenic mutagenic and teratogenic effects. The present study was aimed to determine the amount of toxic pesticides in spinach and cabbage leaf of Bhopal city. We have used pH meter, spectrophotometer and chromatographic methods. Pesticides effect man, animals, plants and soil.

Key words : Pesticides, toxic effect.

Pesticides are the organic chemical used to control unwanted and dangerous species of plants and animals². At present more than 10000 different pesticides are widely used. The need of increased food production as a result of population explosion lead to manipulation of land resources causing a stress in the natural environment. The annual world production of pesticide grew from 6000 million pounds to over 24000 million pounds. Of these 6000 million pounds were organo chlorine insecticides which persist in the environment^{1,3}. The country's average pesticide consumption is around 450 g per hectare. Nearly 67% of the total pesticide are used for the cotton and rice crops. The environmental

hazards associated with effluents and chemical residue in crops and agricultural soil is alarming. About 3 lakh Indian farmers lost their lives due to pesticide poisoning^{4,5}. However the harmful effects of pesticides seem to out weigh the benefits. These harmful effects lead to salinization of the soil, contamination of ground water, depletion of wild life population and encouragement to resistant pest. The hazard caused by pesticides can be broadly categorized as occupational, health and environmental.

My study area is Bhopal district. I have chosen Bairagarh, Misrod and Rapadia gaon fields for the study of effects of pesticides

Table-1. Pesticide Residue In Vegetables (ppm)

Pesticide	Spinach	Cabbage
Heptachlor	0.8	1.0
Aldrin	3	3.5
Dieldrin	2.0	2.0
Diazin	3.0	3.0
Malathion	10	11
Chlorophenoxy	3.0	3.0
Baygon	5.0	5.2

Table-2. Harmful Effects of Pesticides on Human Health

S.No	Pesticide	Effect
1.	Heptachlor	Effects respiratory system
2.	Aldrin	Gastro intestinal effects
3.	Dieldrin	Kidney effect
4.	Malathion	Brain damage
5.	Chlorophenoxy	cancer
6.	Baygon	Toxic for children
7.	Diazin	Disrupting nerve activity

on vegetables. The main crops of Bhopal district are wheat, maize, pulses, rice, soyabean and vegetables. Our main concern is on fields of vegetables like cabbage and spinach. We have used pH meter, spectrophotometer and chromatographic methods for analysis⁶.

The biochemical chemical pathways of toxicants in the body may be carried out in two major phases such as kinetic phase and dynamic phase. The kinetic phase involves extra cellular reaction in the body. The absorption metabolism and distribution of the products

of extra cellular reaction are all included on kinetic phase. In the kinetic phase hydrolysis is an important biochemical reaction in the body. Dynamic phase involves the interaction of the kinetic phase products with the cells tissues or other organs in the body to cause some toxic response.

Oxidative reactions are included in the dynamic phase environmental damage. It is evident that the risk are environmental pollution are the higher with those pesticides with greatest persistence.

Farmer should be trained in handling and use of pesticides.

The sale of hazardous pesticides should be banned.

Organic farming, biodegradable pesticides, bio-pesticides should be offered as substitute's for farming.

Consumer should be advised to wash thoroughly with water all the vegetables, grains and fruits before use. All the analytical laboratories should be equipped with the latest sophisticated instruments for determining the micro quantities of pesticides.

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