Executive Summary of the UGC Minor Research Project
Entitled

Comparative Genotoxicity Profile of Some Pesticides

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Interaction of living cells with the harmful chemical entities that have accumulated at any part of food chain is the major cause of concern behind the numerous health problems and the suspected reasons behind various malignancies related to digestive system .

Current project explores the estimation and evaluation of such harmful chemical entities that have accumulated in food chain viz. Pesticides , herbicides , fungicides etc. These are used in controlling different types of pests, herbs, and fungi ,considered to be safe for the plants on which they sprayed .

In present studies conventionally used insecticides and fungicide viz, Karate, Confidor and Takumni were investigated for their accumulation and interactions with plant tissues from where these can enter in food chain.

The soil samples from the surrounding fields were monitored for the presence of these chemicals with a different time intervals after application . Fifteen days interval was kept constant for collecting soil sample and estimating the chemical pesticides from the sample by spectrophotometric analysis. The half life of all the three chemicals were determined as 3.15 months , 4months and 5.16 months respectively for Karate, Confidor and Takumni .The route through which these chemicals enter the food chain is either by entering in the plant tissue and accumulating in it or by flushed out in nearby water bodies as a result of irrigation or by rain water.

Interaction of these chemicals were initiated with the estimation of effective concentration / percentage $EC_{(50)}$ .For all three chemicals. Percent germination ratio method was carried out for estimation of $EC_{(50).}$ Onion seeds pre-treated with different concentration of pesticides were observed for their germination . Graph of percent germination versus concentration indicated the EC(50) for three pesticides Karate,Confidor and Takumi as 5.2%,5.7% and 6.5% respectively. These doses were considered as a standard percentage dose for further Genotoxicity study .

Onion seeds were treated with above selected concentrations and allowed to grow. Growing tips meristematic tissues were used for determination of mitotic index. Harvested tips are stained and observed for chromosomal aberrations such as fragmentation, bridge formation,, multi-polarity, dicentrics , multi-polarity, sticky chromosomes etc .

All the three chemicals were proved to be genotoxic as well as cytotoxic . Takumi is the most potent cytotoxic and genotoxic. Such type of interaction studies are helpful to create awareness about the use of these harmful chemical pesticides and substantiate the importance of natural replacements .