

## LECTURE # 10

## BIO-ASSAY TECHNIQUES

## TO FIND OUT LETHAL DOSE (LC 50) OF INSECTICIDE IN INSECT

**Experimental Insect:**

Cockroach *Periplaneta americana* (Blattidae)

**Requirements:**

Aparatus: Insect cages, spray pump, stop watch, measuring cylinder, beakers, petridishes etc.

Chemicals: Insecticide, kerosene, distilled water, etc.

**Importance and theory:**

Insecticides are an important component of pest management, without insecticides pest management is still practically incomplete. Although other control measures also play an important role they have certain limitations. However, there is need to minimise the use of insecticides in pest control programme because, insecticides cause several serious problems like pollution and health hazards, pest resistance, pest resurgence, secondary pest outbreak, etc. Appropriate concentration and characteristics of insecticide, environment and type of ecosystem, insecticide appliances, etc. Counts the efficacy of insecticide. Thus, treating the crops with appropriate concentration will help in reducing the use of pesticides and in keeping the environment ecofriendly upto certain extent.

**Procedure:**

Take a given number of insect (30) in different insect cages (Fig. 10 & 11). Dilute the given insecticides with either solvent or water (as per the characteristics of pesticides). Initially make four concentrations, 25%, 50%, 75% and 100% and treat the insects in cages. Observe the mortalities in each concentration. If the mortality is more than 50% then go for diluted concentrations till 50% mortality is obtained and thus confirm the Lc 50. Note down the deaths of each insect after spraying the insecticide for 30 minutes. Repeat the same procedure five times for confirming the results and plot the graph against mortality and percent concentration of the insecticide. The percent of mortality (Lc 50) can be calculated by using Abbott's formula:

$$\frac{v - b}{v} \times 100 = \% \text{ mortality}$$

where,

1. V is number of insects taken for the experiment.
2. b is the number of living individual after spraying at particular time.
3. v-b is the number of individuals killed by insecticide at particular time.