

7. Insect Growth Regulating Compounds

7.1. Phase I

7.1.1. Duration

Total duration of this phase is 3 months.

7.1.2. Objectives

- To evaluate toxicity of insect growth regulating (IGR) compound and determination of doses for treatment in Phase II
- To evaluate the toxicity to larvivorous fish *Gambusia affinis* (Gambusia) and *Poecilia reticulata* (Guppy)

7.1.3. Efficacy evaluation

Laboratory efficacy of different doses of IGR compound should be determined on the basis of adult emergence. Efficacy should be expressed as adult emergence inhibition (EI).

Tests should to be performed in rectangular trays of 2 litre capacity. For treatment, 100 I instar larvae should be used for each dose. The range of doses should be determined as described for chemical larvicides in Phase I trial (5.1.) or the doses suggested by sponsoring agency can be used. The larvae must be fed till pupation and the test should continue till adult emergence. The pupae in each treatment / control will be counted and transferred to separate cages for adult emergence. Emergence inhibition (EI) is

$$\text{Emergence inhibition (\%)} = 100 - \frac{\text{No. of adults emerged}}{\text{No. of pupae collected}} \times 100$$

expressed as EI₅₀ and EI₉₉ using dosage mortality regression lines. In addition duration of larval growth in days both in test and control should be scored to assess the inhibition of larval growth and pupal emergence.

Percentage of adult emergence inhibition (% EI) should be calculated by the following formula on the basis of the number of pupae kept in the cloth cages. Doses for application in Phase II are determined by multiplying the observed EI value with a factor of 2 or 3.

7.2. Phase II

7.2.1. Duration

Total duration of this phase is 3 months.

7.2.2. Objectives

- To evaluate the toxicity of IGR compound under simulated field conditions
- To determine the effective dose and frequency of application in Phase III
- To assess the persistence of the IGR compound

Simulated trials should be carried out in cement tanks as described for Phase II trial of chemical larvicides. EI is assessed as mentioned for Phase I of IGR.

7.3. Phase III

7.3.1. Duration

Total duration of this phase is 6 months.

7.3.2. Objectives

- To evaluate efficacy against larvae of vectors in a locality
- To assess the persistence of IGR compound

Trial should be carried out as described for Phase III of chemical larvicides (5.3.). EI is assessed as mentioned for Phase I of IGR (7.1.).

