

EXPERIMENT NO: 13

AIM OF THE EXPERIMENT:

To study Antiviral Agent & its marketed Product.

THEORY:

A Larvicide (alternatively larvacide) or antiviral agent is an insecticide that is specifically targeted against mosquitoes. Larvicides may be contact poisons, stomach poisons, growth regulators, or (increasingly) biological control agents.

Larvicides are chemical designed to be applied directly to water to control mosquito larvae, adulticides are used in fogging & spraying to control adult mosquitoes. Synergists are not toxic to the mosquitoes themselves, but they make adulticides more effective. A variety of products available in market for the public & for professionals when it comes to mosquito control. Larvicide is a type of insecticide used to control mosquitoes indoors & outdoors around your home. They work by killing mosquito larvae before they can grow into adults. Some formulations work when they come into contact with the larvae.

Mosquito repellents are divided into two chemical classes, namely, synthetic chemicals such as DEET (N, N-diethyl-3-methylbenzamide), picaridin & plant derived oils, such as oil of lemon eucalyptus & oil of citronella.

Biological Control:

Bacteria are used for the control of mosquito larvae. *Bacillus thuringiensis* H 14 & *Bacillus sphaericus*. Available as wettable powder & granules which contain bacteria, spores & toxic crystals. Safe to environment, human being & animals but are expensive.

Bacillus thuringiensis H 14-gram positive, spore forming bacteria which is specifically acts against mosquito larvae. Produces endotoxin which after ingestion causes gut paralysis & leakage of contents into body cavity leading to death. It is applied at 0.5gm/sq.m 250gm of *B.thuringiensis* is mixed with 10L of water to make 2.5% suspension & sprayed at 1L over 50 sq.m every 2 weeks.

BACILLUS SPHAERICUS:

It also produces toxin which is more effective in polluted water suitable for treatment of breeding sites of *Culex*. 500gm of *B. sphaericus* with 10L of water to make 5% suspension & it is sprayed at 1L over 50 sq.m. Every 3 weeks.

OTHER BIOLARVICIDES:

- **Fungi-** Coelomyces, culicinomyces,
- **Nematodes-** Romanomermis cluici vorax & *R.iyengari*.

Marketed Products:

Bactivec, Bacticide, Aquabac, tekmar, vectobac, larvx & VectolexCG.

Chemical Control:

Methoprene is an insect growth regulator agents that interrupts the growth cycle of insect larvae, preventing them from development beyond the pupa stage. They are usually applied to larger bodies of water in the form of time release formulations that can last from one to five months. Use of this larvicide does not pose an unreasonable health risks to humans or other wildlife & it will not leach into the ground water supply. Methoprene is moderately toxic to some fish, shrimp, lobster & catfish & highly toxic to some fish & freshwater invertebrates; it bio accumulates in fish tissues.

Marketed Products:

Abate & proVect.

Acoustic Control:

Sound energy transmitted into water at specific frequencies cause larvae air bladders to instantly rupture, severely damaging internal tissues causing death or latent effects prohibiting further maturity.

Environmental Control:

The most important step in reducing the number of mosquitoes (success depends on community involvement & multisectoral co-ordination)

- Elimination of breeding places (source reduction) like filling & leveling, drainage of breeding places.
- Proper disposal of wastes.
- Cleanliness in & around the house.
- Observing 'dry day'-intermittent irrigation.

LEGISLATIVE MEASURES:

Suitable laws & byelaws should be enacted & implemented for regulating storage/utilization of water by communities, various agencies & avoidance of mosquitogenic conditions at construction sites, factories.

RESULT: Antiviral agent & its marketed products are studied.