

## **The Ovicidal efficiency of seed extracts of *Trigonella fenum-gracium* against *Trogoderma granarium*.**

Nidhi Shekhawat  
Vedanta PG Girls' College, Reengus  
[nidhi14sikar@gmail.com](mailto:nidhi14sikar@gmail.com)

**Abstract:** These experiments were help to depict the efficacy of seed extract of *Trigonella fenum-gracium* called Fenugreek in two different solvents Acetone and petroleum ether. The percent egg mortality and percent corrected egg mortality was estimated in *Trogoderma granarium*. Each extract was applied in four different concentrations as 25%, 50%, 75% and 100% along with control using the solvent only. The solvents were allowed to be evaporated in each. Results showed that seed extract using acetone as solvent, was more effective

### **Introduction:**

Rapid growth of population increases the demand of food products which increases pressure on production. To increase the productivity rate of crops human increases the use of hybrid crops and also the use of fertilizer and pesticides. These pesticides are not used only to save standing crop but also in the storage of our grains. Continuous use of pesticides creates adaptations in insect pest and with time also mutation in them as result new stains are developed. As these pesticides are added with our food material they bio accumulated and magnified in top consumers of food chain and produces many side effects in them. Herbivores are also severely affected by these pesticides, many grains consuming bird species are vanished due their harmful effects. Besides the use of artificial pesticides to prevent the stored food there are many plants natural ingredients that help to reduce the number of insect pest and also no harmful effects on other non- target species. These plants are not only help to regulate the insect population but also safe for our health.

*Trogoderma granarium* beetle which belongs to Order Coleoptera completed its life cycle in four different stages: egg, larvae, pupae and adult. The larvae are the only feeding stage which mainly feeds on our stored grain wheat. The pupae are the dormant stage to convert them into adult and lay eggs to increase their number. If the number of eggs will be controlled then further population growth will be regulated.

*Trigonella foenum-graecum* and known as fenugreek or 'Methi' belongs to Papilionaceae family and its seeds are generally used as food spices and medicine. This legume has antidiabetic, anticarcinogenic and antioxidant properties <sup>(14)</sup> and also used. In this paper we will discuss about the effects of seed extract *Trigonella foenum-graecum* on stored grain pest *Trogoderma granarium*

### **Material and Method:**

The insect pest culture was reared at 35±2°C & 60±10% RH. The two types of seed extract were prepared by soxhlet extraction method using acetone and petroleum ether as solvents and prepared extract was used as stock solution of 100%.

The egg stage was treated by contact method. A thin layer of desired concentration of extract was prepared by uniformly spreading 1 ml of extract in petric dish, after evaporation of solvent, 20 newly laid 20 eggs were transferred in the petridish. The egg hatching was observed after 5 days.

The percent mortality and percent corrected mortality was calculated by Abotts formula (1925)<sup>(1)</sup>.

$$\% \text{ Mortality} = \frac{\text{Mortality} \times 100}{\text{No. of insect taken}}$$

$$\% \text{ Corrected Mortality} = \frac{\% \text{ MT} - \% \text{ MC}}{100 - \% \text{ MC}}$$

Here, MC = Mortality in control; MT = Mortality in treated.

**Result and Discussion:**

Acetone extract exhibited 58.63 percent corrected egg mortality at 25 percent concentration, which was at par (58.92 percent corrected egg mortality) in petroleum ether extract, at the same concentration, at higher concentrations 50, 75 and 100 percent, percent corrected egg mortality was 81.02, 91.36 and 96.53 percent in acetone extract and 64.28, 82.14 and 92.85 percent in petroleum ether extract respectively. Control depicted 3.33 percent egg mortality in acetone and 6.66 percent egg mortality in petroleum ether.

. (Table 1)

S.N.	% Dose Level	% Egg Mortality		% Egg hatched		% Corrected Egg Mortality	
		Acetone	Pet-ether	Acetone	Pet-ether	Acetone	Pet-ether
1	25	60.00	61.66	40.00	38.33	58.63	58.92
2	50	81.66	66.66	18.33	33.33	81.02	64.28
3	75	93.33	83.33	6.66	16.66	91.36	82.14
4	100	96.66	93.33	3.33	6.66	96.53	92.85
5	Control	3.33	6.66	96.66	93.33	-	-

Results express that acetone extract was more effective as it can be due to ingredients are being more soluble in acetone. Similar effects were observed against *Rhizopertha dominica* with using contact method in which extracts were loaded on filter paper.<sup>(9)</sup>

The seed oil of *Trigonella foenum-graecum* content some specific properties as acid value mg KOH/g of 5.00, Saponification value mg KOH/g of oil 200, Ester value 192.50 Free fatty acid value (Oleic acid) /100g 2.50 and Refractive index (at 37 0C) 1.470. <sup>(13)</sup> Hence its concluded that the many plant extracts are also have potent pesticidal properties and this ids the much safer way to regulate the pest population.

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