



## INTRODUCTION

The existing emulsifiable concentrate formulation of synthetic insecticide utilizes petroleum based surfactant and carrier as the inert ingredients. The active and inert ingredients are generally not safe and not environmental friendly. The alternative is to use **plant-based active ingredient** and prepare the emulsion formulation using biobased surfactant and carrier.

## INVENTION

- The nanoemulsion formulations of rotenone from *Derris* spp. were prepared using **plant based surfactant and carrier**.
- The nanoemulsion formulations not only reduce the use of surfactant but increase the safety and effectiveness of the active ingredient. The formulation gave surface tension value **lower than 30 mN/m** yielding even spreading of the active ingredient.
- The formulation TT9 gave the highest toxicity against *Plutella xylostella* with the  $LC_{50}$  value of 0.015 ug/mL while other prepared formulations gave the value ranging from **5 – 11 ug/gmL**.

## BENEFITS

- The toxicity of rotenone against insect pests is comparable with some of most potent conventional organic based insecticides.
- The nanoemulsion formulated rotenone is under **class III** in term of its safety.
- The formulated nanoemulsion of rotenone is a **green product**.

## USEFULNESS AND APPLICATION

- The formulation is potent against cruciferous insect pests and the formulation is not biodegradable while the rotenone is not persistent.
- The potential market for this product is the **vegetable industry** such as in cruciferous crops and the product can be used in **organic farmings** and the **herbal industry**.

## POTENTIAL CONSUMERS

- Pesticide Industry
- Vegetable, organic and herb farms
- SOM accreditation farms
- Aquaculture farms



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