HIM ALBIWASH: Plant based Bio-pesticide, production protocol and application

In Forest as well as in agroecosystems, application of synthetic pesticides has already had detrimental effects on crop protection, including resistance, resurgence, and cumulative effects on forests output. Natural plant extracts, which effectively combat pests and can be used in place of chemical pesticides. Due to their low cost, minimal residual effects, and eco-friendly attributes, biopesticides based on plant extracts have been introduced as a novel crop protection strategy, due to the presence of several secondary metabolites such as flavonoids, terpenoids, alkaloids, phenolics and anthocyanins. Consequently, the study was conducted to evaluate the insecticidal activity of formulation extracted from *Boenninghausenia albiflora* methanolic extract. *Boenninghausenia* is a monotypic highly aromatic plant genus commonly known as 'Pissumar' in the family Rutaceae, typically more or less woody, especially at the base. This perennial herbaceous plant is indigenous to the hills of India and Nepal and have long been used to cure a variety of ailments and used locally as an insect repellent. The various concentrations of extracted formulations of Pissumar were evaluated against serious insect-pest i.e *Plecoptera reflexa, Agrotis ipsilon*(Cut-worm), White grub, *Yponomeuta padella, Heterocrassa expansalis.* The Institute has developed liquid formulation (methanolic extract) of *Boenninghausenia albiflora* following the steps outlined below

Production Protocol

i Under a moderate tap water flow, collected plants were carefully cleaned to eliminate dirt and other impurities followed by being dried in the shade at room temperature.

ii Using a grinder, plant were reduced to powder and thimble is made with 10mg of powder , then content of the thimble is extracted while using methanol as solvent in soxhlet apparatus.

iii Methanol was used as solvent to prepare the crude extract i.e 1:10 % w/v in Orbital Water Bath Incubator Shaker apparatus for 72 hours at 60°C.

iv The extract were then filtered with Whatman Filter Paper Grade No 1. The filtrate was concentrated in a rotary vacuum evaporator at reduced pressure (370 mbar) and 40°C to produce crude extract.

v Dissolve (say) 10 mg crude → 1 mL DMSO (Dimethyl Sulfoxide), mix gently using vortex or magnetic stirrer. Filter using 0.22–0.45 µm filter, now the liquid extract is ready to use.



Method of application and dosages

Add 30ml of **ALBIWASH (65F)** in 1 Litre of water (2%). Mix it well and spray on the infested plant parts. Repeat application after 10 Days if infestation occurs.

HIM BIOKIL-I: Plant based Bio-pesticide, production protocol and application

The extensive use of synthetic pesticides in forest ecosystems and agricultural systems has resulted in several adverse consequences, including the development of pest resistance, pest resurgence, and long-term negative impacts on forest productivity. These challenges have highlighted the urgent need for safer and sustainable alternatives for pest management. Plant extracts possess a wide range of bioactive secondary metabolites such as flavonoids, terpenoids, alkaloids, phenolic compounds, and anthocyanins, which contribute to their insecticidal properties. Recognizing this potential, the insecticidal efficacy of a formulation prepared from the powder extract of *Boenninghausenia albiflora*.

Boenninghausenia albiflora, commonly known as "Pissumar," belongs to the family Rutaceae and is a monotypic, highly aromatic perennial herb, woody at the base. The plant is native to the hilly regions of India and Nepal and has been traditionally used for treating various ailments. It is also widely known in local communities for its insect-repellent properties. Based on these investigations, the Institute has developed a powder biopesticide formulation of *Boenninghausenia albiflora*, named HIM BIOKIL-I, following a standardized production protocol described below

Production Protocol-

i Under a moderate tap water flow, collected plants were carefully cleaned to eliminate dirt and other impurities followed by being dried in the shade at room temperature for 7-8 days.

ii Using a grinder, plant were reduced to powder.

Method of application and dosages

Sprinkle 4 grams of powder on 100 grams of infected seeds. Repeat the application after 10 days if necessary.