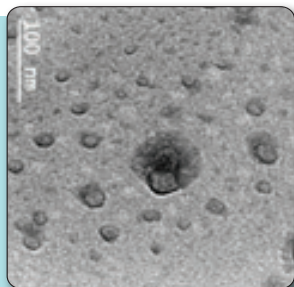


# Insect repellent formulation and methods thereof



SEM image of nanoformulation

## Background

The house fly, *Musca domestica* (L.), is a mechanical carrier of pathogens of human intestinal diseases caused by protozoan, bacterial and viral infections. They are a serious pest in animal rearing facilities. In addition to transmitting disease they also cause annoyance to people working and staying close to animal or poultry sheds. In poultry sheds, flies are controlled using the chemical pesticides. In majority of the cases the chemical pesticides are used indiscriminately and this increase in load of pesticides in animal and poultry sheds leading to causing toxicity to non-target organisms and insecticide resistance. Natural insecticides are considered as an alternative management option, as they are safe to the environment. Essential oils derived from plants possess wide spectrum of biological activities against insects such as repellents, antifeedants, growth regulators and oviposition deterrents. Essential oils and their constituents are not toxic and hence qualify as "low-risk pesticides" However, volatility, poor water solubility, and susceptibility to oxidation are the limitations in use of essential oils in insect management. This demands to develop nanoformulations that are effective.

## Benefits/Utility

The nanoemulsion based formulation effectively control *Musca domestica* in poultry and animal farms. Improved formulation type is capable of exhibiting superior repellence effect on various stages of the flies. The energy efficient manner of providing the nanoemulsion composition which can render such composition economically efficient as compared to the bulk emulsion of natural oil-based products available commercially thereby making the nanoemulsion composition a feasible option.

## Scalability

The technology can be taken up at industrial scale.

### **Target Market customer**

- The poultry and dairy sectors and the solid waste management yards

### **Social impact of the Technology**

- Control of flies in poultry and animal husbandry units is done by indiscriminate use of chemicals insecticides that results build up residues in commodities that are consumed fresh or as processed commodities.
- The technology on nano emulsion-based formulations based on plant derived parts helps to manage the flies in a clean and green manner. Doing so helps to scale down the dependence on chemical insecticides there by limiting the exposure of xenobiotics to humans and non-target organisms.