

Process for Preparing Gecko Repellent from Floral Waste

1. Technology:

The technology depicts the processing of flower waste and how it can be used for preparing gecko repellent. The components used to make VIT gecko repellent are floral waste such as Marigold, which has strong repelling properties due to the presence of pyrethrin, which is a potent insecticide, Hibiscus, which contains citric acid that gives a sour odour that helps repel geckos because they dislike the smell of sour lemon. Tridax has procumbenetin and Cassia has chrysophanol both releasing a foul smell and are volatile. In addition, plant products comprise Cedar which contains cedrol and cedrine; garlic contains alliin; citronella contains citronellal; lemongrass contains geranyl acetate and citral; clove has eugenol and cinnamon has cinnamaldehyde. All these compounds elicit a strong pungent, unpleasant chilli powder-like musky odour that will help to repel geckos easily without harming or killing them. The steps involved in preparing gecko repellent are as follows- (1) The enriched floral waste like marigold, hibiscus, tridax, and cassia was collected and combined with plant products such as lemongrass, citronella, cinnamon, garlic, cedar, and clove from the Vellore Institute of Technology (VIT) Campus. (2) This mixture was then added to the nutrient broth and incubated at 30°C (150 rpm) for 6 days. Due to the presence of microorganisms mainly bacteria like *Proteus*, *Pseudomonas*, and *Bacillus* and the bioactive volatile organic compounds (VOCs), the mixture was degraded and the gases released odours like ammonia, methyl mercaptan (sulphury odour), alliin (pungent odour), sulphides and manganese (rotten egg odour). (3) Further, liquefaction of gases takes place by Linde's Method which aids in converting these pungent smell gases into liquid form, in which gases were compressed at high pressure and the hot gas was passed through a Joule-Thomson expansion valve. The temperature of the gas drops significantly, resulting in condensation. The condensed liquid was collected and separated from the remaining gas. The final liquid product can be used as a sprayer containing all mixtures with unpleasant odour.

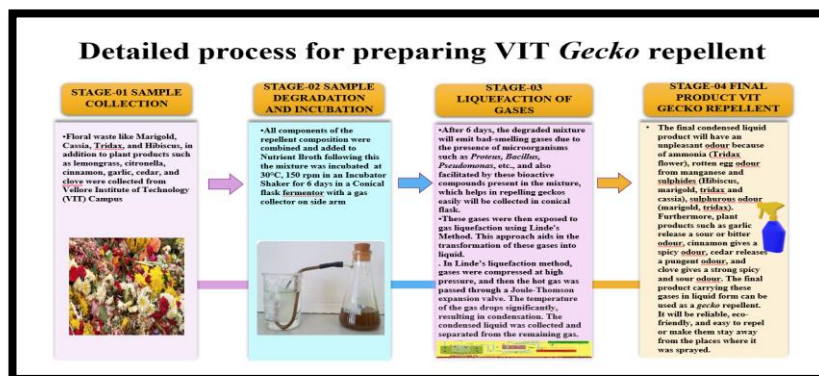


Fig. 1 The flow diagram illustrates the detailed process for preparing VIT Geckos repellent sprayer

2. Problem Addressed:

Flower waste disposed of in water bodies decomposes and depletes dissolved oxygen, depriving natural inhabitants of life-sustaining resources. This causes algal blooms and lake eutrophication, which alters the ecosystem. The most common adverse effects of synthetic repellents are skin irritation and allergic reactions. These effects are more likely to occur with people who have sensitive skin or who have

allergies to other chemicals. The common lizard species in Vellore is *Cnemaspis ota*, commonly known as ota's day gecko or the Vellore day gecko. It is common in regions of Vellore, like Vellore Fort, North Arcot District, Tamil Nadu, India. It contains disease-causing pathogens such as *Salmonella*, the most prevalent pathogen that carries reptiles, especially Vellore day *geckos* and common house *geckos*. *Salmonella* is frequently found in their digestive tracts. Even in good health, they can contain the bacteria. They prominently pose a hygiene problem.

3. Industrial Applications:

- Gecko repellent, insect repellent, sprayer, pest control industry
- Consumer goods industry
- Healthcare industry

4. Patent Application Number: 202341080545