



# Development and production of plant-based biopesticide for control of bee pests and diseases for farmers in Africa

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## INTRODUCTION

Bee pests and diseases are an emerging problem in Africa. There is urgent need for affordable eco-friendly products for farmers to use in managing and controlling bee pests and diseases, as alternatives to hazardous pesticides.

## METHODS

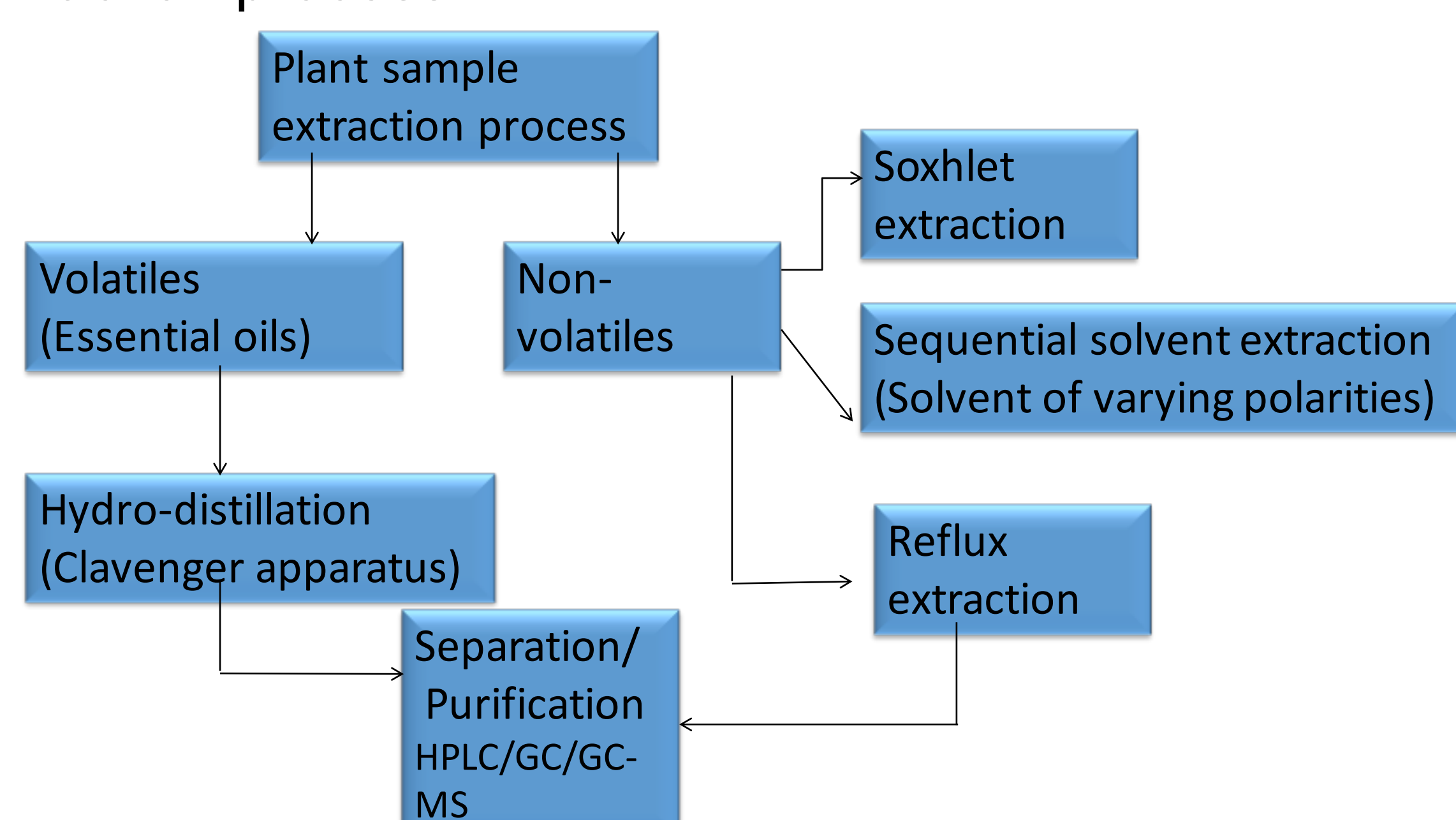
### DISCOVERY PROCESS

#### 1. Selection of plant species for evaluation

- Previous research work
- Traditional knowledge
- Observation
  - Resistance to pest damage
  - Attraction to bees



#### 2. Extraction process



3. Laboratory and field evaluation of plant samples for effectiveness against bee pests and disease vectors and safety to bees, non-target organisms and the environment.



## IMPACT

- We have developed a plant-derived product for control of bee pests and diseases named *Apicure*.
- A patent for the innovation has been filed through the Kenya Industrial Property Institute (KIPI), and is in the process of being filed in other countries (Patent No: KE/UM/2015/00554).

## OBJECTIVES

### Main Objective:

To discover, develop, and promote safer and affordable plant-derived biopesticides from African biodiversity for control of bee pests and diseases.

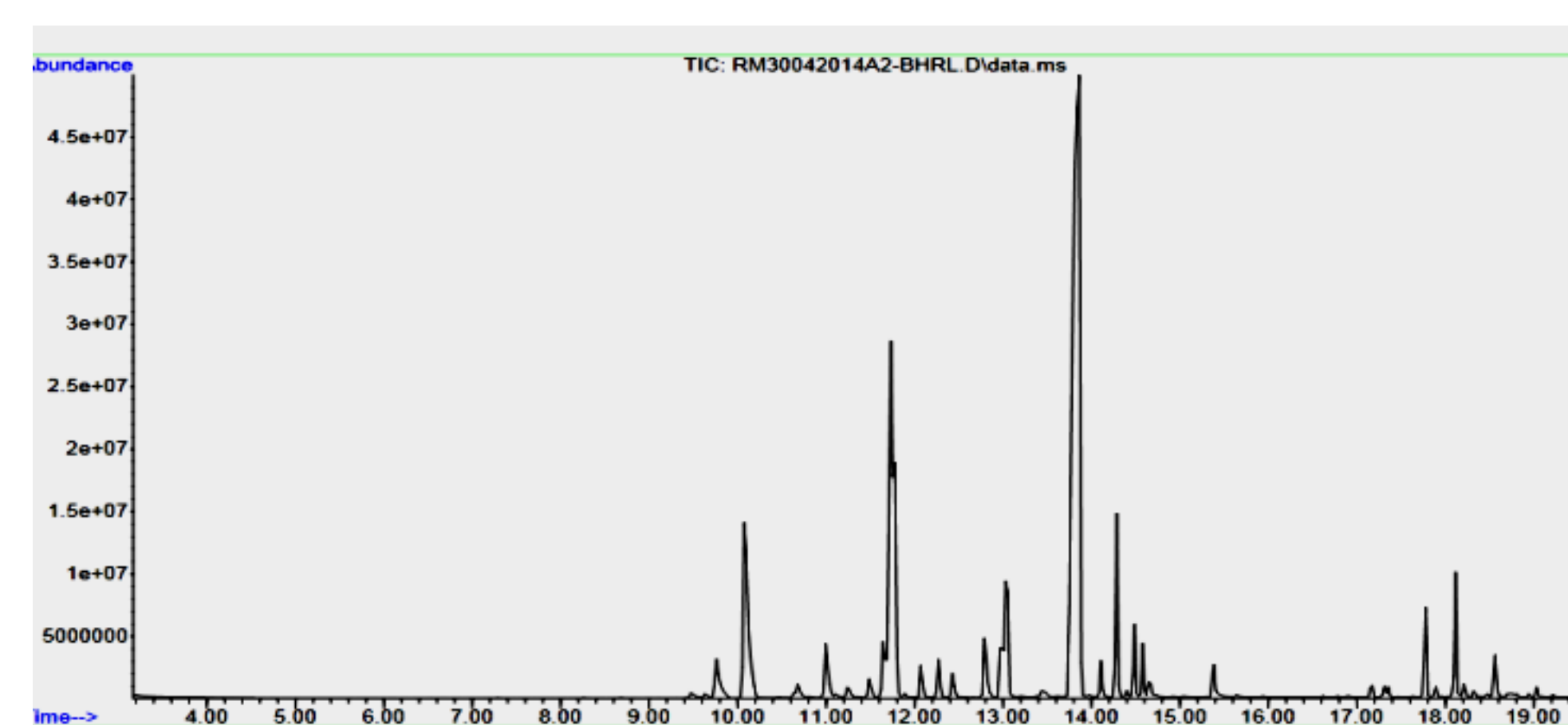
### Specific objectives

- To screen for bioactivity of plant extracts from different plants species;
- To formulate and evaluate effectiveness of plant-based biopesticide on bee diseases and pests;
- To evaluate the safety of the effective plant-based biopesticides on bees, humans, and environment.

## RESULTS

#### 4. Identifying active chemical constituents

-GC-MS spectrum of icipe-BH-01- profile of the ajor constituents



-Laboratory fumigant toxicity bioassay of icipe-BH-01 on varroa mites and bees—after 10 hours of exposure time.

Target	Dose (µl/L)							
	0.5	1	2	5	10	15	20	30
Varroa mite	50 (±8)	60 (±16)	100	100	100	-	-	-
Bee	0	0	0	0	0	10	100	100
Control	0							

Mean percent mortality of varroa mites and bees

#### 5. Product development



## REFERENCES

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