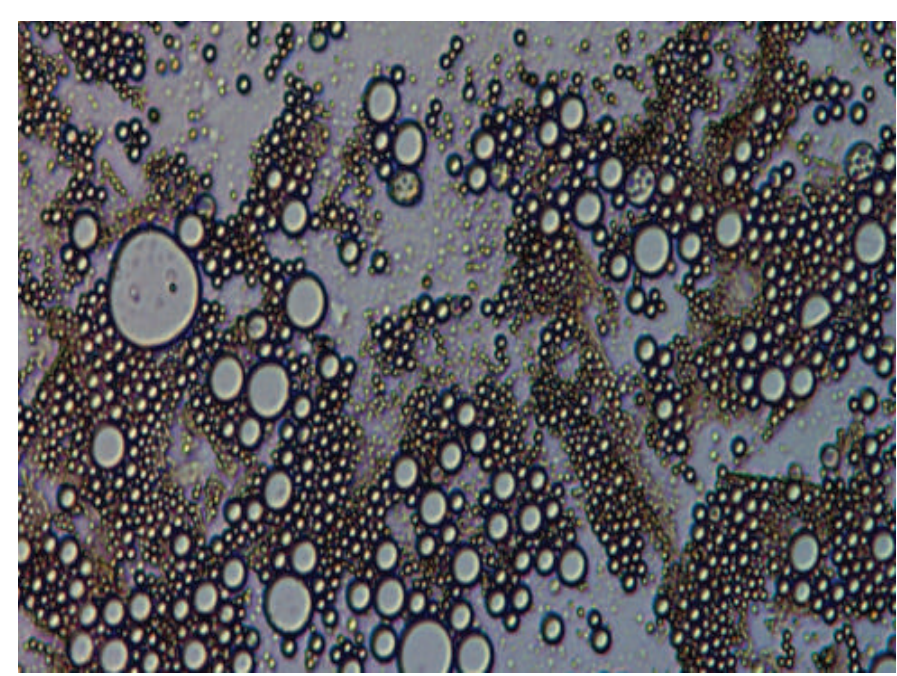
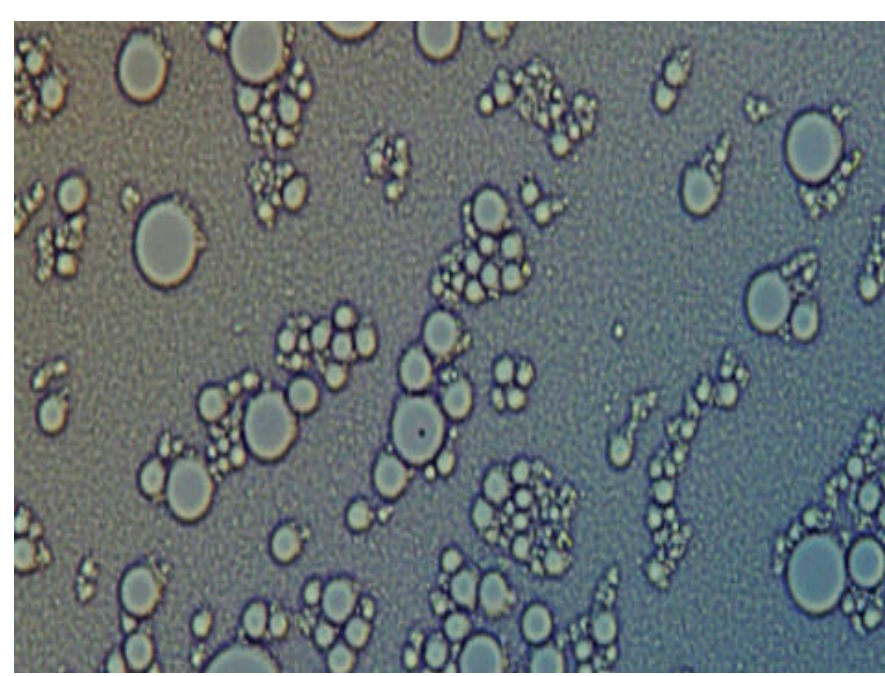


Palm oil-based Nanoemulsion in Water (EW) Insecticide

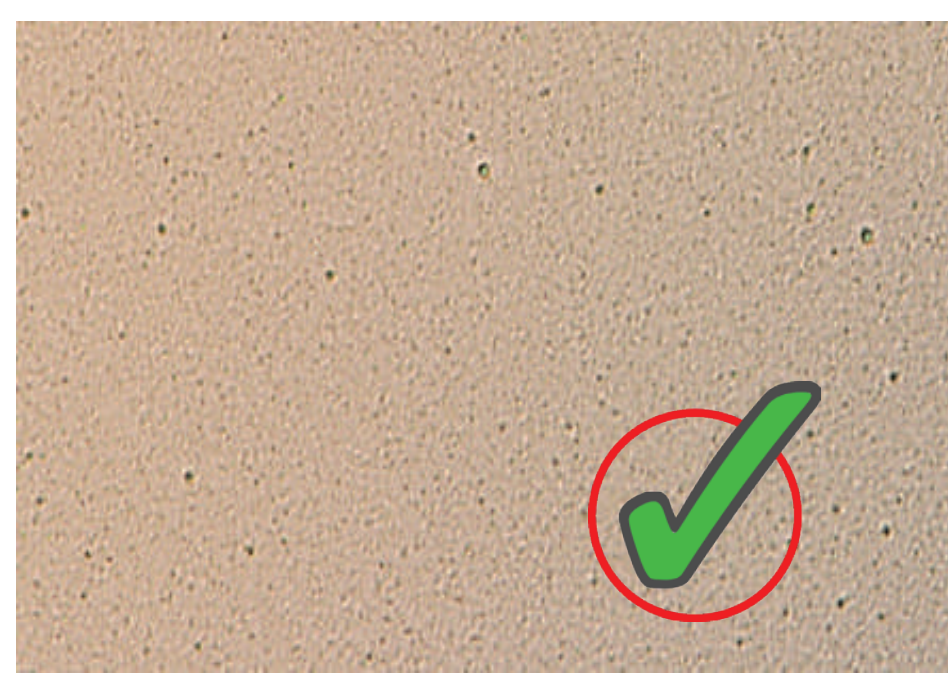
PATENT NO. PI 2019006517



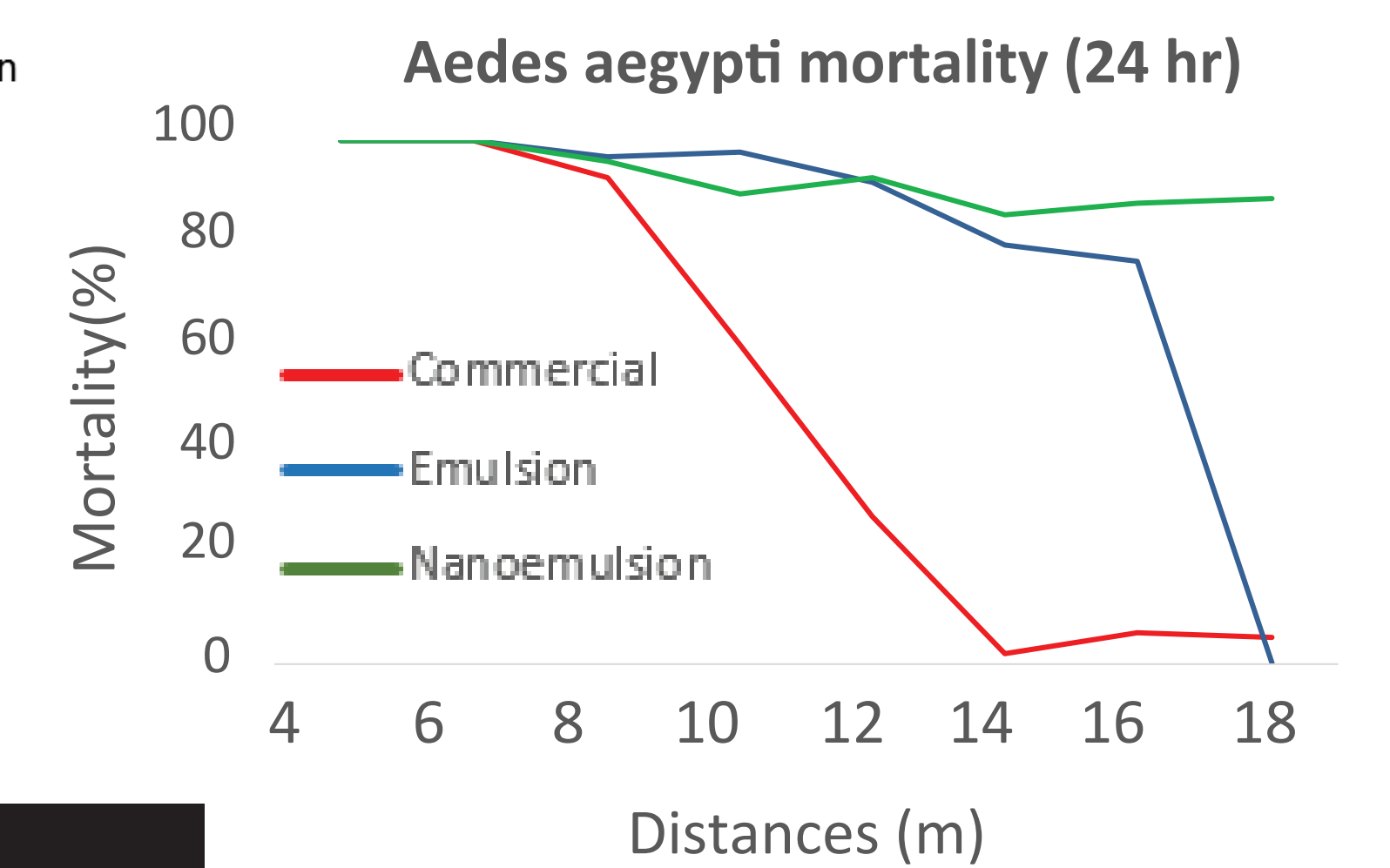
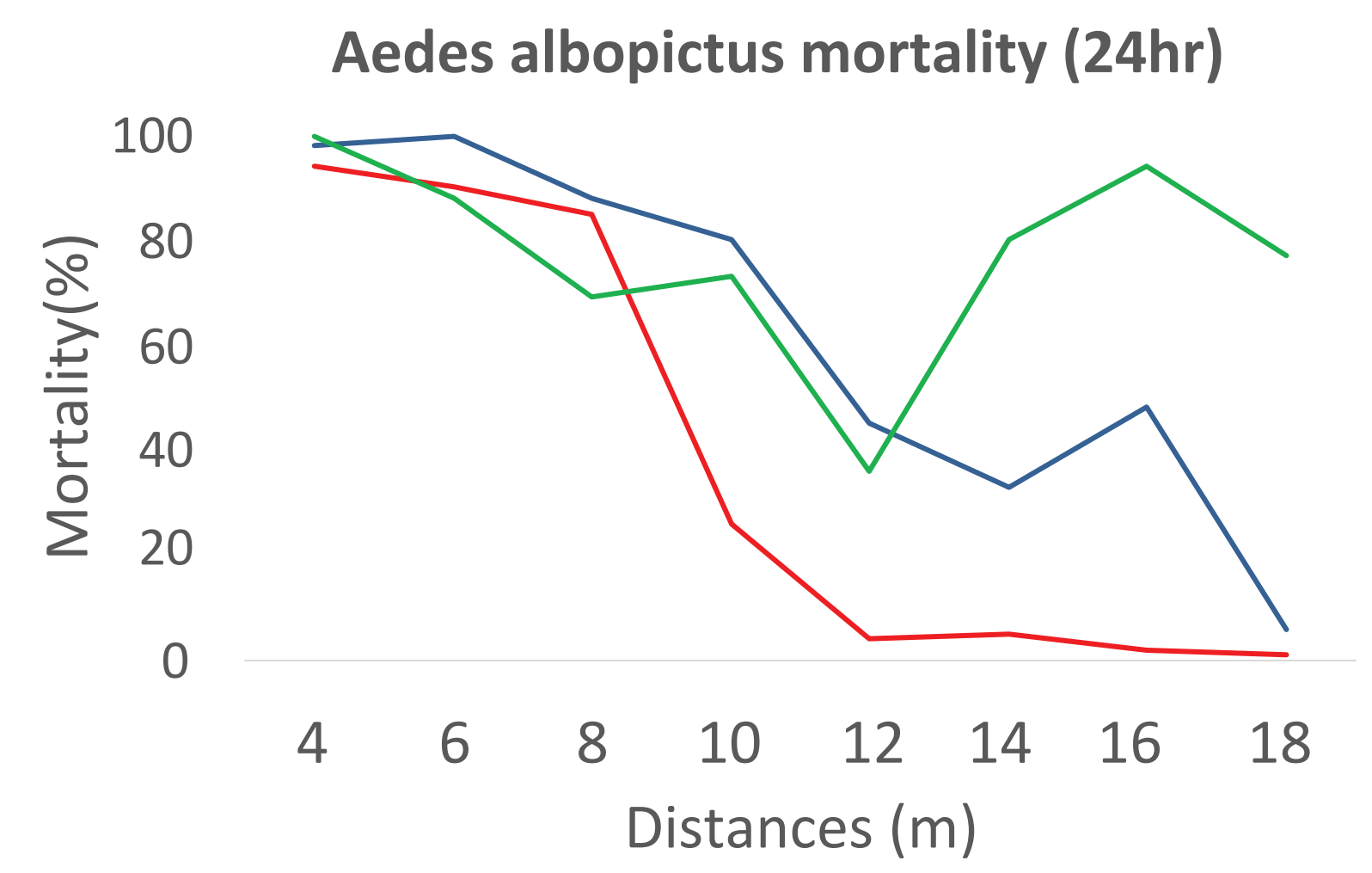
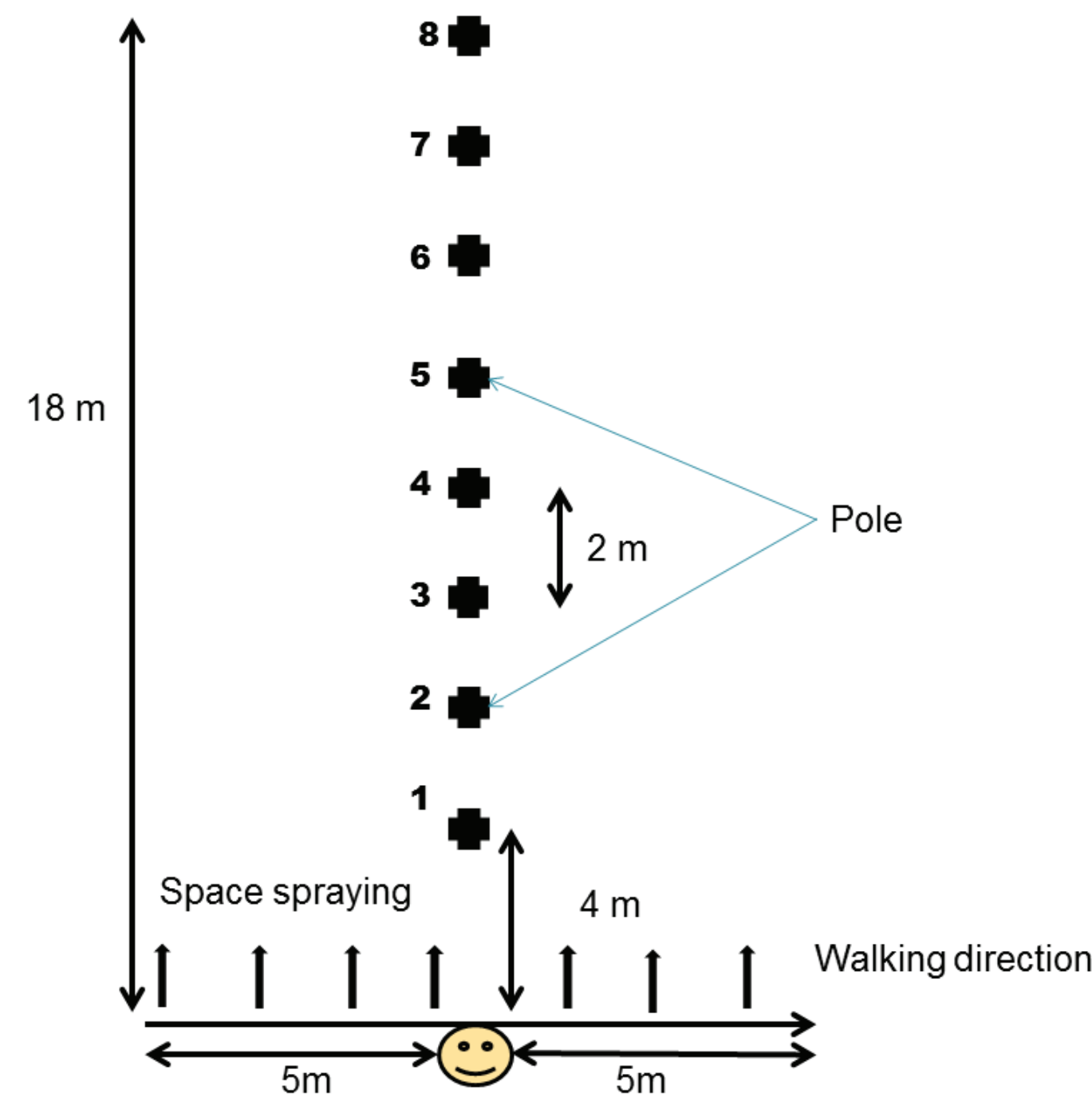
Commercial



Emulsion



Nanoemulsion



BRIEF TECHNOLOGY

Nanoemulsion in Water (EW) Insecticide is effective for fogging application against Aedes mosquitos.

PROBLEM STATEMENT & CURRENT ISSUES

- A dengue epidemic occurred in 2019 reaching 120,836 cases with 336 deaths in Malaysia.
- An effective and environmentally friendly insecticide is needed to replace petroleum-based insecticides.
- Many of today's known organic insecticide compounds (i.e. organophosphates, pyrethroids, benzoyl urea derivatives, carbamates) are poorly soluble in water.
- Conventional emulsion insecticide is used in quantity greater than its effective dose, leading to high cost and pollution

INVENTIVENESS & NOVELTY

- There are many formulations of insecticide that use palm oil methyl ester as solvent but not for space spraying (fogging).
- Our formulated nanoemulsion insecticide is stable and able to remain airborne for an optimum period of time and contains the right dose of insecticide.
- Palm oil methyl ester solvent is chosen because it is biodegradable, non-toxic and non-flammable.

USEFULNESS & APPLICATION

The product is a solution to replace aromatic hydrocarbon-based solvents with water-based emulsion (EW) with palm oil-based solvents that are safe to the environment and human health

IMPACT OF THE PRODUCT

- Nanoemulsion EW insecticide was able to increase mortality in Aedes mosquitos.
- The product can reach further distances due to nanosized particles that can remain airborne longer.
- The droplet size can be adjusted by the levels of pressure and energy input of homogenizers.
- Effective field trials on targeted insects; Nano-sized droplets enhance the penetration and absorption of the active compounds into mosquitos cuticles.

MARKET POTENTIAL

- A high number of dengue cases indicates demand on improved insecticides.
- In 2010, Malaysia spent US\$67.7 million on the National Dengue Vector Control Program, mostly for fogging applications.
- A more natural Insecticides have more preference these days compared to artificial insecticides that harms the earth and final end users.

TRL : 6 – Validation in real environment



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