

COMPOSITION COMPRISING A BOTANICAL EXTRACT AS INSECTICIDAL AGENT (WO/2023/174908)

Summary

This invention converts a promising botanical extract, notably derived from *Sextonia rubra*, into a ready-to-use larvicultural product for mosquito breeding sites. The technology is based on an Emulsifiable Concentrate (EC) formulation, dilutable into an Oil-in-Water (EW) emulsion, enabling homogeneous dispersion in water and enhanced field performance (stability and persistence).

The formulation prioritizes bio-based ingredients and non-VOC solvents, addressing key challenges related to user safety, environmental acceptability and regulatory compliance.

Description of the invention	<p>The invention relates to:</p> <ul style="list-style-type: none"> • an oil-phase composition of the EC type, comprising: <ul style="list-style-type: none"> a) a botanical extract (preferably a <i>Sextonia rubra</i> wood extract containing rubrenolide and/or rubrynlolide), b) one or more bio-based non-VOC solvents (esters of aliphatic monocarboxylic acids, e.g. vegetable oil esters or methyl esters), c) at least two bio-based non-ionic surfactants, d) an anti-foaming agent, • and an oil-in-water emulsion (EW) obtained by simple dilution of the EC, spontaneously forming a stable microemulsion. <p>Beyond formulation development, the patent reports advanced validation data including:</p> <ul style="list-style-type: none"> • efficacy against a wild <i>Aedes aegypti</i> strain (Cayenne) resistant to conventional insecticides, • semi-operational field tests over several weeks demonstrating residual activity, • selectivity data on non-target aquatic organisms and human cell lines, • long-term stability of the extract and absence of repellence on oviposition — a key criterion for breeding-site treatments.
Advantages	<ul style="list-style-type: none"> • Field-compatible formulation: homogeneous dispersion in water, simple dilution-based use • Free of petroleum-based VOC solvents: improved HSE and environmental profile • Predominantly bio-based ingredients (target >98% renewable origin) • Enhanced performance: stability, persistence and efficacy demonstrated under semi-operational conditions • Improved selectivity compared to crude extract (based on non-target organism assays) • Realistic industrial scalability: simple mixing and solubilization processes using commercially available formulation ingredients
Applications	<ul style="list-style-type: none"> • Public health / vector control: treatment of mosquito breeding sites (local authorities, mosquito control operators) • Deployment in areas facing resistance to conventional insecticides • Formulation platform adaptable to other lipophilic botanical extracts (subject to regulatory approval)
Mots-clés	Emulsifiable concentrate, microemulsion, bio-based formulation, non-VOC, surfactants, larvicide, <i>Aedes aegypti</i> , <i>Sextonia rubra</i> , rubrenolide, rubrynlolide, vector control
TRL	TRL 5/6: validated formulation, demonstrated stability, semi-operational efficacy and selectivity/innocuity data available.
Partnership / License	License / option
Development stage	<p>Technology already structured as a formulated product, with performance data close to real-use conditions (persistence, semi-field trials).</p> <p>Next steps include industrial optimization, full regulatory studies, and large-scale field trials</p>