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**INTELLECTUAL PROPERTY:**
**TRADEMARK (TM2020002489)**
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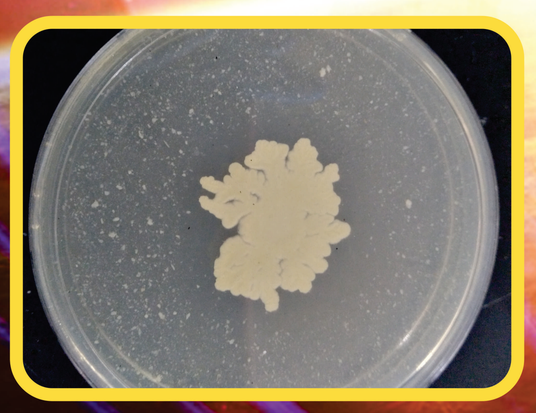
**TRADE SECRET (TS/IO/2020/082)**
**PATENT NOVELTY SEARCH:**
**NOVEL, INVENTIVE AND INDUSTRIAL APPLICABLE**

# Bio-BacChi™ Anti-Termite

## INTRODUCTION

Bio-BacChi™ Anti-Termite product is the *Bacillus licheniformis* strain USMW10IK isolated from termite gut mix with colloidal chitin extracted from shrimp skin. *B. licheniformis* was induced with colloidal chitin for chitinase production and this crude enzyme was later used as bio-termiticide against subterranean termite infestation.

## PROBLEM STATEMENT

- From 3,106 termite species:
  - 371 are destructive in agriculture and urban environment
  - 104 are serious threat
- Subterranean termites attack (90% of total economic loss)
- Current product in the market only targeted “lower group termite” but NOT EFFECTIVE in controlling “higher group termite”

## NOVELTY AND INVENTIVENESS

- **Novelty** – Organic product made from bacteria and shrimp skin (colloidal chitin)
- **Mortality** – The delayed toxicity effect not only allowing the active ingredient to be transferred but also guarantee the mortality of termites
- **Cost effective and environmentally friendly** – The product is biodegradable to the environment and can be manufactured in high quantity with low cost as no high-end technology is required
- **Special Features** – The product is non-toxic to human or animals. The selling price will be lower than the current commercial product available in the market

## INTELLECTUAL PROPERTY (IP) STATUS

- Bacteria strain (USMW10IK) deposit and validate in GenBank NCBI (Accession no:KX037110)
- Trademark (TM2020002489)
- Copyright (LY2020000328)
- Trade secret protection under Universiti Sains Malaysia (TS/IO/2020/082)
- Patent novelty search: novel, inventive and industrial applicable

## USEFULNESS AND APPLICATION

- Chitinase can directly degrade the exoskeleton of termites
- This product showed significant mortality to higher group termite when it directly contacts with the termite exoskeleton

## STATUS OF INVENTION

- TRL 4: Built in a laboratory environment

## COMMERCIAL POTENTIAL

- Pest Control Industries
- Pest Control Operator (PCO) company in managing pest problem
- Pesticide Chemical Supplier

## POTENTIAL PARTNERS

- Ensystex Malaysia Sdn Bhd
- High End Solution Research Center Sdn.Bhd

## KNOWLEDGE MANAGEMENT

- Financial supported by
  - Industrial Research Grant (304 / PBIOLOGI / 650716) RM 150,000
  - Rui Grant (1001/PBIOLOGI/811241) RM 10,000
- Three scientific publication (SCOPUS)
  - Malaysian Journal of Microbiology
  - Journal of Asia Pacific Entomology
  - Biocatalysis and Agriculture Biotechnology

## IMPACT OF THE PRODUCT

- Safe to environment
- Wealth creation
- Green and eco-friendly technology product
- Open a new opportunity for the pest control industries to venture into Sustainable Green Pest Management

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