# EFFICACY STUDY OF A BED BUG TRAP MANUFACTURED BY LABORATOIRE LMC UNDER SIMULATED CONDITIONS

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**Study no.**

2021LMCclLab01

**Study subject**

Bed bug trap

**Study system**

Common bed bug (*Cimex lectularius*)

**Customer:**

Laboratoire LMC
ZI de Baléone – Lot Pasqualini
20167 SARROLA-CARCOPINO

**Commissioner's Representative**
Mathieu LENOUVEL
Tel.: +33 (0) 9 84 24 86 56
Mobile: +33 (0) 6 50 34 91 82
E-mail: contact@laboratoire-lmc.fr

**Research facility**

IZINOVATION
13 rue des Emeraudes
69008 LYON

**Head of Biological Research** (responsible for the coordination, the technical and scientific aspects of the Study Plan, the communication with the Technical Director, as well as for the Report)
Aurélien GUICHERD
Tel: + 33 (0)6 23 06 10 64
E-mail: aurelien.guicherd@izinovation.com

**Technical Director** (responsible for carrying out the study according to the Study Plan, as well as for maintaining the wellbeing of animals)
Quentin BENINTENDI Mobile : +33 (0) 6 78 32 09 02
E-mail: quentin.benintendi@izinovation.com

**Study site:**

EcoAquatron Univ, Lyon UMR LEHNA
LYON I, 43 Bd du 11 Novembre 1918, UMR CNRS 5023 – Ecologie des Hydrosystèmes Naturels et Anthropisés [*Ecology of natural and anthropogenic hydrosystems*], Bât. Darwin C, F-69622 VILLEURBANNE Cedex France

## 1 – INTRODUCTION

The aim of the study was to verify, under laboratory conditions, the attracting effect of a bed bug trap combined with a solid attractant (a tablet placed in the trap).
Within the framework of the study, two methods were used. For every method, a zigzag-folded nest containing approximately ten bed bugs was placed in a box within a distance of 60 cm from the examined trap.
Subsequently, the traps were monitored at the following times: T+2h, T+4h, T+8h, and T+24h. Between all of the monitoring times, the complete system was placed in darkness in order not to disturb the behavior of the insects.
The examination methods are presented in the following report.

## 2 – STUDY SUBJECT

### 2.1 – Features of the study subject

| | |
|---|---|
| **Name** | **Trap – attractant in the form of a tablet**  |
| **Active ingredient(s)** | Not determined |
| **Batch no.** | Not determined |
| **Packing** | Box with 5 foldable traps |
| **Supplier** | Laboratoire LMC/ PANKO |
| **Supplied number** | 1 box with 5 traps + attractant tablets |
| **Storage conditions** | Room temperature, protect from light |

### 2.2 – Preparation of the study subject

Early preparations were not necessary, as the product was ready for use.

## 3 - STUDY SYSTEM

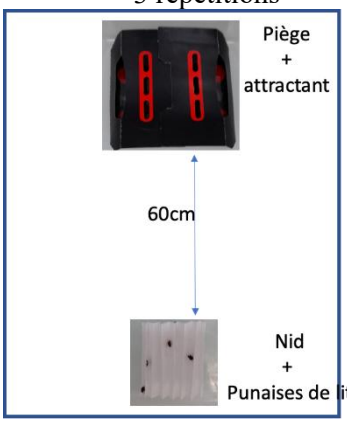
| | |
|---|---|
| **Species** | Common bed bug (*Cimex lectularius*) |
| **Justification** | The bed bug (*Cimex lectularius*) is one of the representative species for using the study subject. |
| **Special conditions** | No special conditions were required except from the use of 10 bed bugs for each method in order not to cause a behavioral reaction that could threaten the determination of results. |
| **Origin** | Laboratory breeding<br>Zoological department of EcoAquatron Univ, Lyon UMR LEHNA |
| **Number** | 10 bed bugs for each method |

## 4 – CONDITIONS AND RESULTS OF THE EXPERIMENT

## 4.1 First method

Standard laboratory study

- 3 repetitions *[Trap+ attractant]*




*[Nest + bed bugs]*

Figure 1: Installation scheme

- Placement of the trap and the attractant
- Placement of the nest with 10 bed bugs

**Results of the daily monitoring of the presence of bed bugs in boxes (first method)**

| | | 1st repetition | 2nd repetition | 3rd repetition |
|---|---|---|---|---|
| T2h | In movement | 1 | 1 | 0 |
| | Zigzag-folded nest | 3 | 2 | 3 |
| | LMC/ PANKO trap | 6 | 7 | 7 |
| T4h | In movement | 0 | 0 | 0 |
| | Zigzag-folded nest | 3 | 1 | 2 |
| | LMC/ PANKO trap | 7 | 9 | 8 |
| T+8h | In movement | 0 | 0 | 0 |
| | Zigzag-folded nest | 1 | 1 | 1 |
| | LMC / PANKOtrap | 9 | 9 | 9 |
| T+24h | In movement | 0 | 0 | 0 |
| | Zigzag-folded nest | 1 | 1 | 1 |
| | LMC / PANKOtrap | 9 | 9 | 9 |

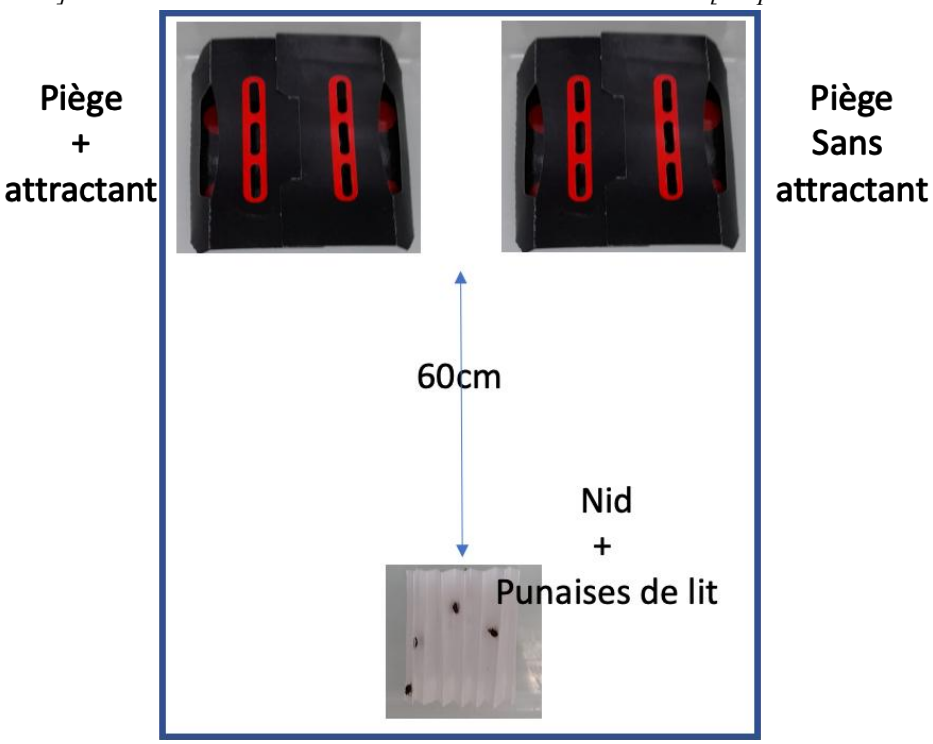
After this test, an examination using a second method was carried out to confirm or question the attracting effect of the trap. To this end, one repetition was examined.

## 1.1 Second method

Laboratory study under competitive conditions

In conjunction with the results achieved using the first method and in order not to make conclusions about the potential attracting effect of the tablet or the trap itself, two methods were used competitively in relation to the same box.
A trap with attractant was directly confronted with a trap without attractant.
After ten (10) bed bugs were placed in a box, monitoring of the performance at T+2h and T+24h was activated.

*[Trap + attractant]* *[Trap without attractant]*




*[Nest + bed bugs]*

**Results of daily monitoring of the presence of bed bugs in boxes (second method)**

| Day | Number of bed bugs per trap | |
|---|---|---|
| | Trap without attractant | Trap with attractant |
| D0 (T+2h) | 1 | 2 |
| T+24h | 5 | 5 |

## 5 – CONCLUSIONS AND RECOMMENDATIONS

We were commissioned by Laboratoire LMC/ PANKO to prove the attracting effect of a carton trap combined with a bait tablet.

The ECHA website (https://echa.europa.eu/en/regulations/biocidal-products-%20regulation/product-types) currently defines attractants as products used to control harmful organisms (invertebrates such as fleas, bed bugs etc. and vertebrates such as birds, fish, rodents) by repelling or attracting, including those that are used for human or veterinary hygiene either directly on the skin or indirectly in the environment of humans or animals.

Taking into consideration all results achieved using the two methods, as well as the behavior observed in the laboratory, it seems that:

- the trap is effective and allows to capture bed bugs quickly;

- attractant in the form of tablets does not necessarily allow to collect a greater number of bed bugs; in fact, the results from the second method show that the configuration of the trap is as important as the addition of the attractant.

It has to be noted that according to ANSES website, products containing substances of natural or food origin, such as essential oils or vinegar, and claiming a biocidal effect are assessed and authorized in the same way as other biocidal products (https://www.anses.fr/en/content/biocidal-products).

In order to use an assessment and to market a so-called “attractant”, even if it is deemed natural, the authorities require data on its efficacy from laboratory tests as well as from field studies.