

# THE END-PACKING RICE PROTECTION with Eco-Eff® in all commercial presentations.

Safe **Cost-Effective** Reliable



Making **Life Better**  
[www.ndpharmabiotech.com](http://www.ndpharmabiotech.com)

## The Natural Protection for Rice from Crop to Table

Eco-Eff® is the cutting-edge food product and technology for Rice protection that works from Crop to Table, designed by ND Pharma.

### How Eco-Eff™ can help in protecting packed rice and analogues?

Once the rice is treated primarily with Eco-Eff™ in silos and during storage periods, there are some hidden dangers that may appear when final packed product is arriving to logistic platforms, supermarkets, warehouses, and all kind of storage premises and the most important, customer's house. Insects and bugs may plant their eggs (*under 1mm*) within the inner part of the grain where the vast majority of chemical pesticides and prevention products (most of them toxic chemicals based) never reach and/or have a limited efficacy.

The special formula and technology of Eco-Eff™ helps to prevent eggs from being hatched during the periods of storage and when conditions of temperature and humidity favours such hatching.

Nothing less desirable, expressed in terms of quality perceived by customers than a pack of rice with bugs inside, at any moment of the product shelf-life. Eco-Eff™ makes possible such kind of protection without altering product characteristics and attributes and with no Chemical-Toxics intervention, in a safe and natural way.

### Dosage for final and end-stage packaging.

From a small doses of 0,2 g/kg of Rice / Raw Foods, Eco-Eff™ is still working in the prevention and protection of rice against egg development, nymphs and larvae appearance. Subsidiary Eco-Eff™ is also helpful in protection against other spoilage elements as fungus, moulds, yeasts and certain bacteria (*i.e: Bacillus cereus, etc.*).

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## The Natural Protection

Eco-Eff® efficacy was tested in a multipurpose centric study made by independent companies and audited<sup>(1)</sup>

## Purpose of Study

To test efficacy of Eco-Eff™ Powder in the preservation of stored and/or packed rice free from pathogens as insects, fungus and certain bacteria in regular/standard storage conditions.

## Materials and Methods

In a Latin American Country (Ecuador) under special conditions of humidity and altitude, test were conducted on Fiberglass transparent containers of 0.50 m<sup>3</sup> x 0.50 m<sup>3</sup>.

16 Kg of regular white rice (peeled) for samples and 100 Kg of peeled regular white rice in 2 bags of 50 Kg.

## Treatment T1: Eco-Eff™ Powder

### SAMPLES 1

WEIGHT: 8 kg

SURFACE T1: 0.50 m<sup>3</sup> X 0.50 m<sup>3</sup>

APPLICATION: Manual

DOSAGE: 1 gr / kg

NUMBER OF APPLICATIONS: 1

TEST DATE: Lunes 06 / August / 2.018

FIRST OBSERVATION: 20 / Aug / 2.018

SECOND OBSERVATION: 03 / September / 2.018

THIRD OBSERVATION: 24 / September / 2.018

*(1) Study performed by Quimasa-Manuchar in Ecuador over commercial samples of white rice. Quimasa-Manuchar is a multi-million Euro company based in the Netherlands and operating worldwide.*

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## Treatment T1: Control

SAMPLES 1

WHEIGHT: 8 kg

SURFACE T1: 0.50 m3 X 0.50 m3

APPLICATION: N/A

DOSAGE: N/A

NUMBER OF APPLICATIONS: 0

TEST DATE: 06 /August /2.018

FIRST OBSERVATION: 20 /Aug/ 2.018

SECOND OBSERVATION: 03/ September / 2.018

THIRD OBSERVATION: 24/September/ 2.018

## Treatment T2: Eco-Eff™ Powder

SAMPLES. 1

WHEIGHT: 50 kg

APPLICATION Manual

DOSAGE: 1 gr / kg

NUMBER OF APPLICATIONS: 1

TEST DATE: 06 / August /2.018

FIRST OBSERVATION: 20 / Aug/ 2.018

SECOND OBSERVATION: 03/ September / 2.018

THIRD OBSERVATION: 24/September/ 2.018

## Treatment T2: Control

SAMPLES 1

WHEIGHT: 50 kg

APPLICATION: N/A

DOSAGE: N/A

NUMBER OF APPLICATIONS: 0

TEST DATE: Lunes 06 /August /2.018

FIRST OBSERVATION: 20 /Aug/ 2.018

SECOND OBSERVATION: 03/ September / 2.018

THIRD OBSERVATION: 24/September/ 2.018

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## Application Description

Application of T1 Series was made manually covering all tested area within the fiberglass container.

Application of T2 Series was made manually, cross-mixing with rice within the bag.

## Application Description

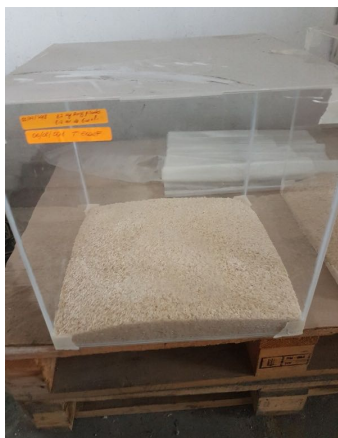
Data gathering pretends to determinate following parameters:

- Eggs, larvae, worms, insects presence, etc.
- Formation of fungi and certain bacteria.

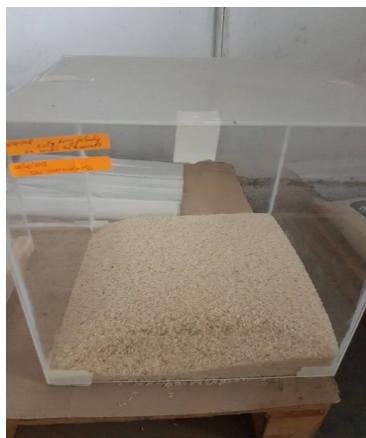
## Frequency of Observation

Observation was performed each 15 days.

Test initiation (06/08/18), First Observation (20/08/18), Second Observation: 03/09/18), Third Observation: 824/09/18).



Treatment 1



Control 1

T1 Eco-Eff and Control

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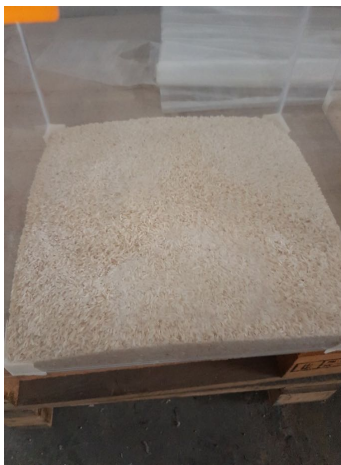


Treatment 2

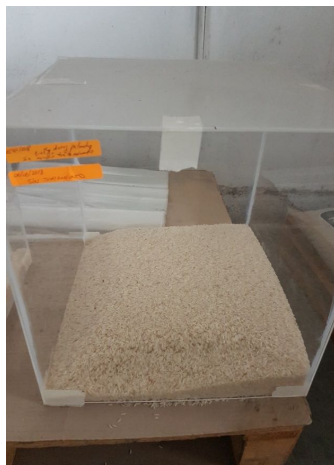


Control 2

T2 Ecoeff (Left) and control (Right)



T1 First Obs: 15 days



T1 Control 1: 15 Days

T1 @ 15 Days Observation

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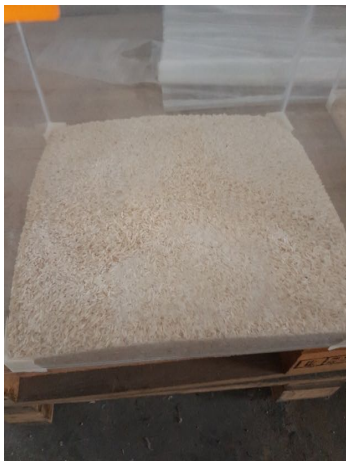


T2 Second Obs: 30 days



T2 Control: 30 Days

T2 @ 15 days Eco-Eff (L) and control (R)



T1 Second Obs: 30 days



T1 Control 2: 30 Days

T1 @ 30 days Eco-Eff (L) and control (R)

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Treatment 2 Eco-Eff (30 days)



Control 2 @ 30 days

T2 @ 30 days Eco-Eff (L) and control (R)



T1 @ 50 days Eco-Eff (L) and control (R)

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Treatment 2 Eco-Eff (50 days)



Control 2 @ 50 days

T2 @ 50 days Eco-Eff (L) and control (R)



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## Observations and conclusion:

Within the first period of 15 days, during observation no presence of adult insects were verified both for T1 and T<sup>2</sup> including Control samples.

During second observation, @ 30 days period, presence of adult insects, larvae, butterflies and eggs in development period appeared both Control samples T1 and T2.

No adult insects and other kind of living insects were identified in T1 and T2 Eco-Eff treated samples.

During third observation samples treated with Eco-Eff @ 50 days period no living insects were found, despite that some butterflies and adults were found dead. While living insects appeared on both control samples @ 50 days.

As a Conclusion is that Eco-Eff presents a very high efficacy within the prevention of insect appearance in packed and stored rice up to 30 days with a small amount of 1g/kg application.

In other embodiment, Eco-Eff @ 1g/Kg kills insects on several developmental stages impeding the growing of insect populations. In Control samples, we have found higher number of insects in direct relationship with the amount of time since packing and storage.

**In such way, we can attest that Eco-Eff is wide effective in the control of insect populations from every developmental stage in long-time packed and stored foodstuffs as white rice from very small amounts as 1g/Kg<sup>(1)</sup>**

*(1g of Eco-Eff™ per Kilogram of Rice) as study testing example.  
Higher doses will imply better control rates and cost-effective quality perceived ratios.*

## Application of Eco-Eff™

Eco-Eff™ is proven to protect foodstuffs from egg hatching, controlling the bug lifecycle and avoiding onset of insects in a wide array of packed foodstuffs with many applications from processing to end-stage packaging as ideal cost-effective solution for industry in the protection of foods during all shelf-life.

Easy to apply and dose, do not creates impact in the process and/or changes in final product attributes and characteristics. From a simple 0,2 g/kg of food is effective

Eco-Eff® is a food product, made with a proprietary technology and composed by mineral salts of natural origin, fully authorized worldwide to be in contact with foods as components are classifieds as food ingredients without IDA or ingest limits. Components are ubiquitous within nature, so its eventual ingestion or presence within the human organism (or animals) do not alter any value in blood or tissues. Components are considered nutrients itself, so beneficial issues may derived from consumption.

Eco-Eff® components are also a natural source of nutrients (as mineral salts and substances) as a beneficial source of nutrients, so safety is guaranteed.

Eco-Eff® is available to best suit your specific needs for all-in-one Crop, Foodstuffs and final End-Stage packing protective solution

## Cutting Industrial Costs with Eco-Eff®

Eco-Eff® treatment and processing of raw foods and materials is in absolute cost-study more effective and less-expensive than any other existing solutions for raw disinsection, treatment, protection and control, especially in the long-term treatment and processing of foods. Ask Us about!.



## ND Pharma & Biotech – We do Science for You.™

For more information on the most effective way to protect foods with Eco-Eff®, contact us now: [info@ndpharmabiotech.com](mailto:info@ndpharmabiotech.com) | [www.ndpharmabiotech.com](http://www.ndpharmabiotech.com)

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