

# GUARDOX® OE

## IN MAYONNAISE

Handary®  
SHELF LIFE



### KEY BENEFITS

- Delay of oxidative rancidity
- Anti-acrylamide
- Maintains freshness and quality
- Shelf-life extension;
- Clean Label

	Guardox® OE
Code	1302
Registration Number	Clean Label
Organoleptic impact	No Impact
Source	Non-GMO
Thermal Stability	Up to 180°C
Applicable pH	5.0 - 6.0
Recommended dosage	0.2-0.4g/Kg
Packing Size	0.5KG, 5KG, 15KG
Appearance	Brownish powder
Labelling	Olive pulp Extract
Solubility	Water Soluble

### NATURAL ANTIOXIDANT IN MAYONNAISE

Consumer interest in natural antioxidants has increased in recent years, and the general trend calls for the replacement of synthetic molecules by natural compounds. Oxidation and the development of rancidity are also a major challenge for food manufacturers as it shortens the shelf life and alters the quality and nutritional value of their products.

In the case of oil-in-water emulsion products, such as mayonnaise, typically containing 65-80% oil, with a low pH-value and high water activity, such conditions can favor yeast spoilage, molds, and lactic acid bacteria during the shelf life.

Handary's Guardox™ range is a group of natural antioxidants derived from plant extracts that prevent oxidation and improve color stability in various foods, thus meeting the demands of clean label consumers.

Natural olive pulp extract, Guardox™ OE, is rich in polyphenols and is widely used as an antioxidant flavoring against lipid peroxidation in various foods.

### OUR BRANDS

#### GUARDOX® OE Olive Pulp Extract



## CASE STUDIES

Olive Pulp Extract Guardox™ OE by Handary has been often used in food applications such as culinary, meat and oil-in-water emulsion products. One of the studies performed by Handary's R&D team was the application of Guardox™ OE in mayonnaise, one of the most commonly used oil-in-water emulsions.

Mayonnaise typically contains 65-80% oil, with a low pH value, 4.0 - 4.7, and water activity ranging from 0.93 to 0.95. Mayonnaise shelf-life is mainly limited by these conditions that favor the spoilage problems by yeasts, molds, and lactic acid bacteria, leading to economic losses.

### GUARDOX™ OE: MAYONNAISE SHELF-LIFE EXTENSION

The graph and images below portray the unique efficiency of Guardox™ OE against yeasts and molds in Mayonnaise. To obtain the best results, Handary has been working towards giving you the optimal preparation of the product, as can be seen in Figure 1.

Graph 1 shows the fungal growth observed just after one week in the control samples, while the homemade mayonnaise samples added with 0.04% Guardox™ OE effectively inhibited yeast and mold growth up to one month of storage at 4 °C. The shelf-life observed after one week, control samples began to show perceived rancidity due to off-odors and off-flavors with sensory degradation (= end of shelf life) observed after 21 days of storage.

After one month of shelf life, the yeasts and molds counts reached 5.1 log CFU / g and 2.6 logs CFU / g for the control and treated mayonnaise, respectively. The desirable sensory attributes of Guardox™ OE samples were maintained up to 3 weeks of shelf life.

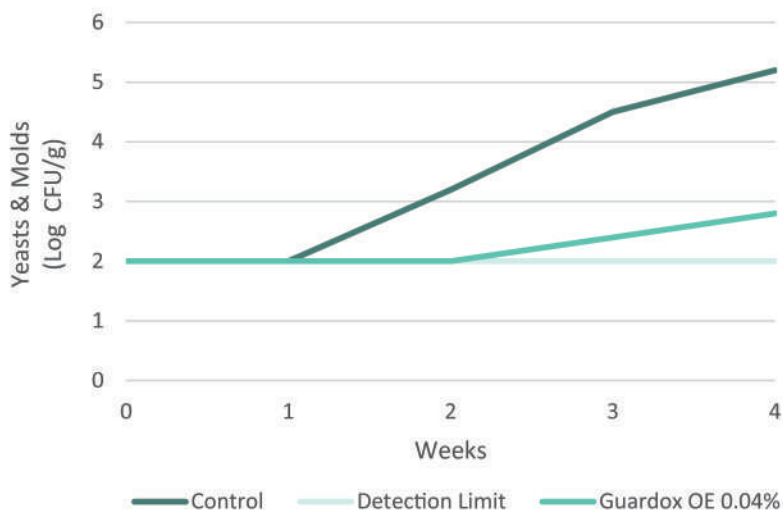
Homemade Mayonnaise preparation and storage:

66% Sunflower Oil  
28.6% Egg Yolk Liquid  
4.8% Lemon Juice  
0.6% Salt

0.04% (w/w) OPE  
Guardox™ OE, Handary S.A.

Control & OPE Samples

Storage at 4°C up to 1 month



Graph 1.

The antifungal effect of Guardox™ OE at 0.04% (w/w) added to homemade mayonnaise stored at chilled conditions (4°C) for up to one month.

## CONCLUSION

To our knowledge, this is the first study that portrays the potential effect of Olive Pulp Extract against yeasts and molds growth in oil-based salad dressings.

This brings us to a conclusion that besides its powerful antioxidant effect, Guardox™ OE may also be incorporated into formulations as an antimicrobial booster offering total protection and increasing the stability and shelf-life of oil in water emulsion products.





# APPLICATION GUIDELINE

The following guideline will assist you to get the optimum solution by using Handary Guardox™ OE in mayonnaise recipe to effectively and naturally extend the microbial stability and the shelf-life of mayonnaise.

The recommended dosage of Guardox™ OE is added together with the spices during the production process. Dosages ranging between 0.02% and 0.04% of Guardox™ OE are added based on the weight of the final product.

## 1. Direct Addition Into Mayonnaise Formulation

Follow the suggested dosages to apply Guardox™ OE directly into the mayonnaise formulation.

Ingredient	Application		Benefits	Dosage
Guardox™ OE	Dressings	Dips & Sauces	Oxidative rancidity delay and microbial stability	0.02– 0.04% w/w

## 2. Mayonnaise Manufauring Process

Follow the representative production flow chart of mayonnaise and the recommended stage of product incorporation to get the best efficiency for Guardox™ OE application. Guardox™ OE is easily water soluble, which ensures uniform distribution and effectiveness in all oil-in-water emulsions such as mayonnaise.

