

PROTERIA® CP

IN BREAD APPLICATION



KEY BENEFITS

- Natural mold inhibitor;
- Incorporated into formulations;
- No impact on fermentation process
- Maintains freshness and quality
- Shelf-life extension
- Clean Label

NATURAL MOLD INHIBITOR IN BREAD

Breads are the most perishable staple foods consumed worldwide, with a shelf-life of 3 to 5 days and susceptible to easy spoilage issues. Their intrinsic factors such as high-water activity and slightly acid pH favor the growth of molds. Although bread is baked under high temperatures, spores' molds can still grow inside the packaging during the shelf-life of the product, resulting in quality defects such as visible mycelia appearance, rancid taste, off-color, nutrition, and economic losses for the industry as well as independent bakeries.

Traditionally, propionic acid and its salts are used as preservatives to extend the shelf-life of bread. But with the changing times and trends, consumers are opting for ingredients they can trust. Labeling has become a crucial tool to recognize and opt for products made up of 'consumer-friendly clean ingredients.

Proteria® CP is produced by fermentation of corn sugar with selected *Propionibacterium* strains which meets consumer demands of friendly labelling and function. It has proven to effectively inhibit the growth of spoilage molds (e.g., *Penicillium* spp., *Aspergillus* spp.) during the bread's shelf-life without compromising its quality, freshness, and sensory characteristics.

OUR BRANDS

PROTERIA® CP

Fermented Corn Sugar



	Proteria® CP
Code	0601
Registration Number	Clean Label
Organoleptic impact	No Impact
Source	Non-GMO, renewable
Thermal Stability	Up to 121°C
Applicable pH	2 - 9
Recommended dosage	2-5g/Kg
Packing Size	0.5KG, 5KG, 15KG
Appearance	Yellow White Powder
Labelling	Cultured Dextrose

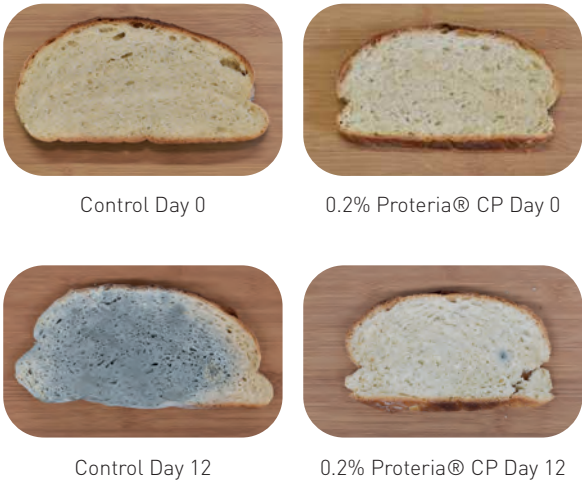
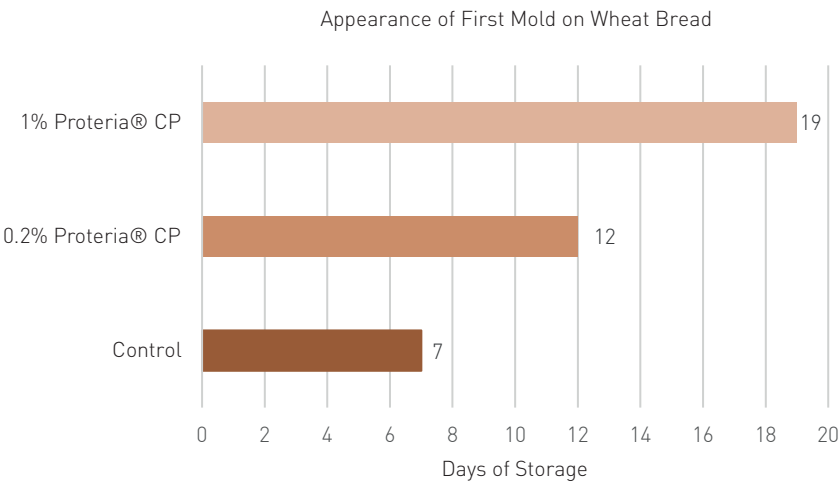
CASE STUDIES

Bread shelf-life is mainly limited by the spoilage by molds due to the appearance of visible mycelia from at least one spore that germinates and grows on the product surface before the end of the shelf-life. This after all leads to consumer rejection and economic losses. Proteria® CP has been widely used as a clean-label and natural mold inhibitor to extend the bread shelf-life.

Proteria® CP Slice Wheat Bread Shelf-Life Extension

The graph and pictures below display the exclusive results of first mold appearance in freshly baked and sliced wheat bread added with Proteria® CP at 0.2% and 1.0% dosages, compared with control (untreated) bread, stored at 22°C. Control bread (without any addition of natural or chemical preservatives) exhibited the first visible mould after 7 days of storage and was completely mouldy after 12 days storage. On the other hand, the first mould appearance on samples treated with Proteria® CP at 0.2% and 1.0% were observed after 12 and 19 days storage, respectively.

This study shows that Handary's Proteria® CP is an effective natural clean-label solution to increase the microbial stability and the shelf-life of sliced bread.

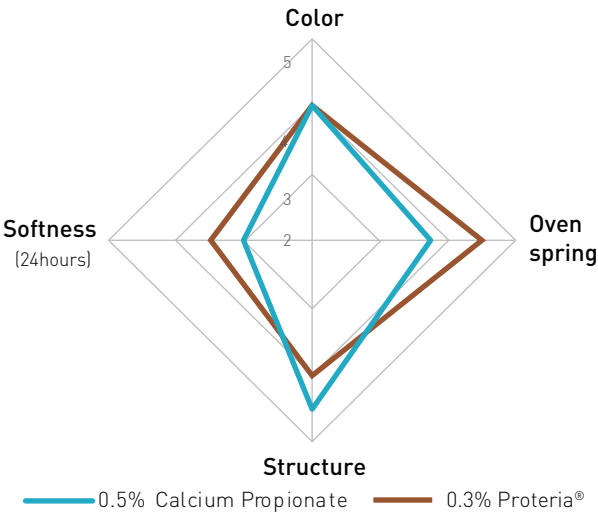


Sensorial Effects of Proteria® CP in Wheat Bread

The following figure displayed compares different sensorial parameters of bread treated with calcium propionate and Proteria® CP.

The figure portrays that the use of Proteria® CP gives similar protection to wheat bread as conventional synthetic calcium propionate.

All in all it explains that the color of the bread was not affected by the addition of Proteria® CP, it helped to maintain the softness of the bread for longer than calcium propionate and as for the oven spring data, Proteria® CP positively helped with the growth of the product while baking and maintained uniform structure over time.



APPLICATION GUIDELINE

The following guideline will assist you to get the optimum solution by using Handary Proteria® CP fermented corn sugar to effectively and naturally extend the microbial stability and the shelf-life of bread.

Proteria® CP recommended dosages, based on the flour weight, are added along the other dry ingredients at the beginning of dough preparation during the making of bread. Dosages ranging from 2-10 g of Proteria® CP are then added per 1 kg of flour.

1. Direct Addition Into Bread Formulation

Follow the suggested dosage to apply Proteria® CP directly into Bread product formulation.

Proteria® CP	Bakery	Buns & Rolls	Prevent Mold Growth	2-10 (g/kg)
		Pan Bread	Prevent Mold Growth	2-10 (g/kg)
		Pizza Crust	Prevent Mold Growth	2-10 (g/kg)
		Sourdough	Prevent Mold Growth	2-10 (g/kg)
		Tortillas	Prevent Mold Growth	2-10 (g/kg)

2. Bread Manufacturing Process

Follow the representative production process flow chart of bread and the recommended stage of product incorporation to get the best efficiency of Proteria® CP application.

