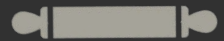




In Bakery, Confectionery and More

**PROTOSORB™**

High Performance Formula



A fresh  
start  
every day

**PROTOSORB™**

HIGH-PERFORMANCE FORMULA FOR BAKERY,  
CONFECTIONERY AND INDUSTRY APPLICATIONS

## **PROTOSORB™** by ND Pharma

**PROTOSORB™** ingredients, especially **Sorbic Acid** are recognized as effective antimould and biopreservative agents, and have been considered historically safe for food use as “Generally Regarded As Safe” or (GRAS) for use in foods.

**PROTOSORB™** can be used to retard microbial degradation in a large variety of food items. Major groups of foods in which **PROTOSORB™** has been used commercially to get maximum performance and profit of its antimicrobial activity include *baked goods, cheese, cake, chocolate coatings, fish products, fruit, butter, salad, vegetables and wine.*

The usefulness of **PROTOSORB™** as a mould inhibitor in bakery products such as *cakes, cake mixes, pies, pie filling, doughnuts, etc.* has also been demonstrated by different studies and tests. In general, **PROTOSORB™** is effective against bacteria, and especially moulds and yeasts. The major commercial use of **PROTOSORB™** is as a fungi-static. Several studies have demonstrated the inhibitory effect of **PROTOSORB™** on mould growth in food products. **PROTOSORB™** exhibited a great effect on the growth of *Aspergillus niger* and *Penicillium* species.

**PROTOSORB™** at recommended concentrations have no major impact on food quality. **PROTOSORB™** is more than twice as effective as propionates in inhibiting mould growth in bakery products. **PROTOSORB™ may be used in** spray onto the product's surface after baking or mixing it with fatty acids, such as palmitic.

**PROTOSORB™** has also been successful in controlling mould growth without interfering in the fermentation process. The heat of the baking process hydrolyses and releases the sorbic acid within the formula that inhibits moulds during storage. **PROTOSORB™** acts synergistically with *sodium chloride, calcium propionate, sodium propionate, citric acid* and *sucrose* achieving a longer shelf life for products where it's used.



# PROTOSORB™

**PROTOSORB™** can be added to foods as a preservative, fighting against bacterial, fungal and yeast growth that contaminates food, rendering it unsafe for consumption. PROTOSORB™ and its different formulas are used in an array of foods and beverages. The formula ingredients are safe, versatile and efficient, according to different tests, studies and the existing food regulations worldwide.

## Appearance

The principal ingredient of PROTOSORB™ is SORBIC ACID that is an unsaturated fatty acid with a weak acrid odor and acidic taste. We produce it as a colorless or white crystalline powder. The formula is very stable at high temperatures, so they can be used in heated food and similar products. PROTOSORB™ is soluble to varying degrees in both water and alcohol.

## Antimicrobial Activity

PROTOSORB™ appears to be very effective at inhibiting most common microorganisms that cause foods to spoilage. It's also effective against certain bacteria, particularly in the concentrations added as a preservative. PROTOSORB™ is founded primarily effective against certain strains of yeasts and molds, and they work by inhibiting enzymes in microbial cells.

## Uses

### Bakery Products

Bakery products leavened with chemical compounds and raised with yeast may be greatly benefited from being preserved with PROTOSORB™. When it is used in products raised with yeast, PROTOSORB™ extend the shelf life of the bakery products without having any harmful or unpleasant effects on the yeast fermentation.

### Fruits and Vegetables

PROTOSORB™ can be used in various fruits and vegetables, including *cherries, olives, pickles, figs, prunes and relishes*. When used in coleslaw and salads, such as potato salad, tuna salad and other prepared salads containing fruits and vegetables, the shelf life of the product is extended. The components of PROTOSORB™ will act as a fungi-statics and preventing fungi within the fruits and vegetables from growing, not killing it.

### Meats

The progression of mold growth is inhibited on country-cured hams when sprayed with a PROTOSORB™ solution. When fresh poultry is dipped into a solution of such, the amount of sustainable bacteria within the food is reduced. Fish products are also dipped into a solution of this formula to extend shelf life and reduce yeast and mold growth within the product.

**PROTOSORB™** is presented in 2 different commercial formats:

### PROTOSORB™

*Sorbic Acid, Potassium Acetate, Sodium Diacetate.*

*and*

### PROTOSORB™ Low Moisture

*Sorbic Acid, Potassium Sorbate, sodium Diacetate, Silica.*

*This proprietary formulas and mixing system (after single grain fusion technology process) are engineered for maximum and optimum performance in a variety of elaborated products within bakery, confectionery, pastry, etc., when a full preservative force and capacity is demanded without sacrificing taste, power and consumer's taste experience.*

**PROTOSORB™** has a 2 years shelf-life and is presented in a 25 kg safety pack.

*For more information, please ask to your local distributor or send us an e-mail to:*

*info@ndpharmabiotech.com*

**Reference: PROTOSORB™**

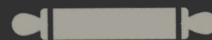
# HIGH SORBIC ACID BASED INTEGRATED FORMULA...

## FOR A BETTER TASTE, FLAVOR, TENDER AND SHELF-LIFE OF YOUR PRODUCTS

In Bakery, Confectionery and More

### PROTOSORB™

High Performance Formula



ND Pharma & Biotech Co.

A BIOPHARMACEUTICAL, BIOTECHNOLOGICAL AND  
GLOBAL CHEMICAL COMPANY

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*We have been an independent, family-owned and financially stable private company serving as provider for the Pharmaceutical, Health, Research, Biotechnology, Food, Agricultural and Chemical Industry since our incorporation.*

*We have established a series of strong partnerships and alliances worldwide to serve more efficiently to our clients and customers. Our exclusive business model is part of our uniqueness within the creation of added value and strategic advanced solutions for you.*

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