

# CNBAP

## Anti-pseudomonas



*4 Protection Food Cultures with Protective Effect*

## Protect dairy products from unwanted microorganisms

No additives, no preservatives, 100% natural are the most prevalent trends that guide the choices of consumers; safety, durability and high quality standard level of foods is as important as ever. Sacco System has the right ingredients for the success of your products and the satisfaction of your customers.

**4Protection Food Cultures with Protective Effect** help to enhance the quality and protect your brand image, allow the product to get to the end of shelf life ensuring structural and sensorial stability, help to maintain freshness and don't change the taste, aroma and texture. Your ally for a much genuine product till the consumer table.

### *How 4Protection Food Cultures with Protective works*

Today it is known that microorganisms produce a diverse range of microbial defence molecules including exotoxins, lytic agents, metabolic by-products and bacteriocins from EFFCA position PFC-2016).

The process is based on a competitive effect for space against microorganisms in general, including pathogens, on the production of anti-microbial metabolites such as organic acids and peptides with specific mode-of-action.



Rennet, Lactic Bacteria and Probiotics  
since 1972  
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# CNBAP is the natural solution against blue colour formation in Mozzarella

## Cultures with protective effect vs *Pseudomonas* spp.

*Pseudomonas* spp. are ubiquitous and psychrotolerant Gram-negative bacteria, frequently isolated from refrigerated raw milk.

*Pseudomonas* spp. can enter the processed products through post-pasteurization contamination from the dairy processing plants via raw materials and Mozzarella storage liquid. *Pseudomonas* spp. are able to survive and grow in different environments thanks to their ability to produce persistent biofilms.

Different strains and species of *Pseudomonas* spp. are associated with discoloration defects in fresh cheeses.

Some strains produce pigments (pyoverdine or pyocyanin) and this ability is strain rather than species specific.

The pigments production is related to *Pseudomonas* load (up to  $10^7$  CFU/g).

Species	Isolation origin
<i>P. putida</i>	Mozzarella cheese
<i>P. chlororaphis</i>	Mozzarella cheese
<i>P. aeruginosa</i>	Collection strain (provided by LGC standard)
<i>P. fluorescens</i>	Mozzarella cheese
<i>P. fluorescens</i>	Mozzarella cheese
<i>P. jessenii</i>	Mozzarella cheese
<i>P. koreensis</i>	Mozzarella cheese
<i>P. luteola</i>	Water



## Solution Method

### *Pseudomonas* spp. monitoring

The storage liquid was inoculated with  $1 \times 10^3$  CFU/ml of *Pseudomonas* spp. pool previously described.

After the inoculum of *Pseudomonas*, the storage liquids were also inoculated with the culture with protective effect Lyofast CNBAP diluted in phosphate-buffer in order to inoculate  $1 \times 10^6$  CFU/ml in the product.

Negative control (only contaminated with *Pseudomonas* spp.) was also set up. After the inoculation, all samples were incubate at 4°C for 20 days. Triplicate samples of each mozzarella were analyzed for the determination of *Pseudomonas* spp. count the day of inoculation (T0), and after 11 and 20 days of storage at 4° C.



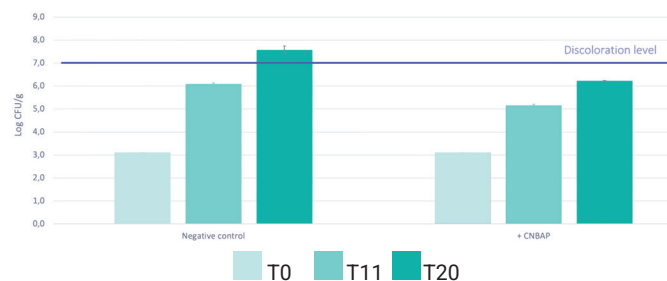


# Lyofast CNBAP, the natural solution against blue colour formation in Mozzarella

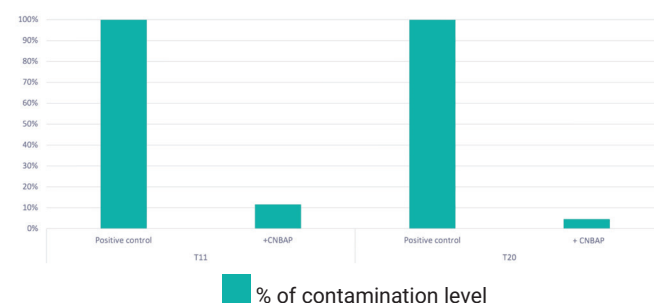
Lyofast CNBAP can survive and grow in conditions of pH, NaCl concentration, temperature similarly to the psychotropic spoilage microorganisms: thus, the addition of CNBAP to the Mozzarella storage liquid during the shelf life can limit the growth of *Pseudomonas* spp., thus improving the durability of chilled foods.



CNBAP maintains *Pseudomonas* contamination under the discoloration



More than 90% of inhibition of *Pseudomonas* by using CNBAP.



## The addition of CNBAP do not cause off-flavour in Mozzarella

### Sensory evaluation in Mozzarella samples

