



# ZINCNOVA™

## STABLE AND TASTELESS SOURCE OF ZINC



**CONTRIBUTES TO NORMAL FUNCTION OF THE IMMUNE SYSTEM**

**HELPS TO THE MAINTENANCE OF NORMAL BONE**

**AIDS TO NORMAL COGNITIVE FUNCTION**

**CONTRIBUTES TO THE MAINTENANCE OF NORMAL VISION**

EFSA proposed wordings

### DESCRIPTION

An encapsulated zinc oxide to protect it from reacting with other components of the foods. **ZINCNOVA™** does not add undesired taste or colour to the final product whilst ensuring its delivery in the stomach ready for the uptake, improving the quality of the product thanks to the benefits of zinc.

### COMPOSITION

Mono-and Diglycerides of Fatty Acids (E471), Zinc Oxide.

### A NUTRITIONAL VIEW

A lower content of zinc in the body may be due to inadequate intake among other causes. Products from animal origin are zinc sources, however their consumption is limited. Cereals and legumes not only contain zinc but other components that inhibit its uptake in the intestines.

Zinc participates in all major biochemical pathways. It has an effect in multiple aspects of the immune system and is crucial for

normal development and function of cells mediating non-specific immunity. Moreover, nutritional zinc is required for the growth, development, and maintenance of healthy bones.

Zinc deficiency affects cognitive development by alterations in attention, activity, and motor development. In addition, it is also involved in the normal vision function.

Minerals in presence of moisture may react in food with free radicals and oxygen leading to undesirable changes in colour, taste and appearance or even affecting nutrient stability.

**ZINCNOVA™** helps to improve immune system, normal cognitive function, and to maintain normal bone and vision without adding undesired colour or taste to foods.

### APPLICATIONS

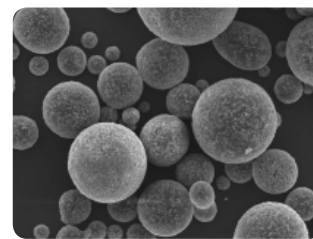
Suitable for food supplements and foods such as: dairy products, cereals, nutritional bars, confectionery...



## CHARACTERISATION

### MICROCAPSULES STRUCTURE DETERMINATION

The microcapsule structure of **ZINCNOVA™** was determined by Scanning Electron Microscopy. The spherical geometry of **ZINCNOVA™** diminishes the contact surface, minimising the grainy texture of the fortifying agent in the mouth.



70 µm

**NO GRAINY TEXTURE**

## ASSAYS

### TASTE STABILITY

A panel of 8 volunteers tasted a commercial milk fortified with 0.1 mg/mL **ZINCNOVA™**. The non-enriched milk was used as a control. The taste of the milk with **ZINCNOVA™** did not show any remarkable difference respect to the non-fortified one.

**TASTELESS**

### COLOUR STABILITY

An orange juice was fortified with 0.1 mg/mL **ZINCNOVA™** or non-encapsulated zinc oxide. The same commercial milk was used as a control. The samples were homogenised and pasteurised and the changes in colour were controlled by a colorimeter. The colour of the juice containing **ZINCNOVA™** was similar to that of the commercial juice.

**NO COLOUR CHANGE**

### RELEASE ASSAY

In order to study the availability of the zinc after the digestion in the stomach, 0.1 mg/mL **ZINCNOVA™** was added in a simulated gastric fluid (pH 1.2-1.5) with and without pepsin for 2 hours. Samples were taken every 30 minutes to study the kinetics of release of the active ingredient. It was liberated more than 75% of  $Zn^{2+}$  after 90 minutes. In presence of pepsin, the release effectively increased to 80% and 100% after 1 and 2 hours.

**EFFECTIVE RELEASE IN THE STOMACH**