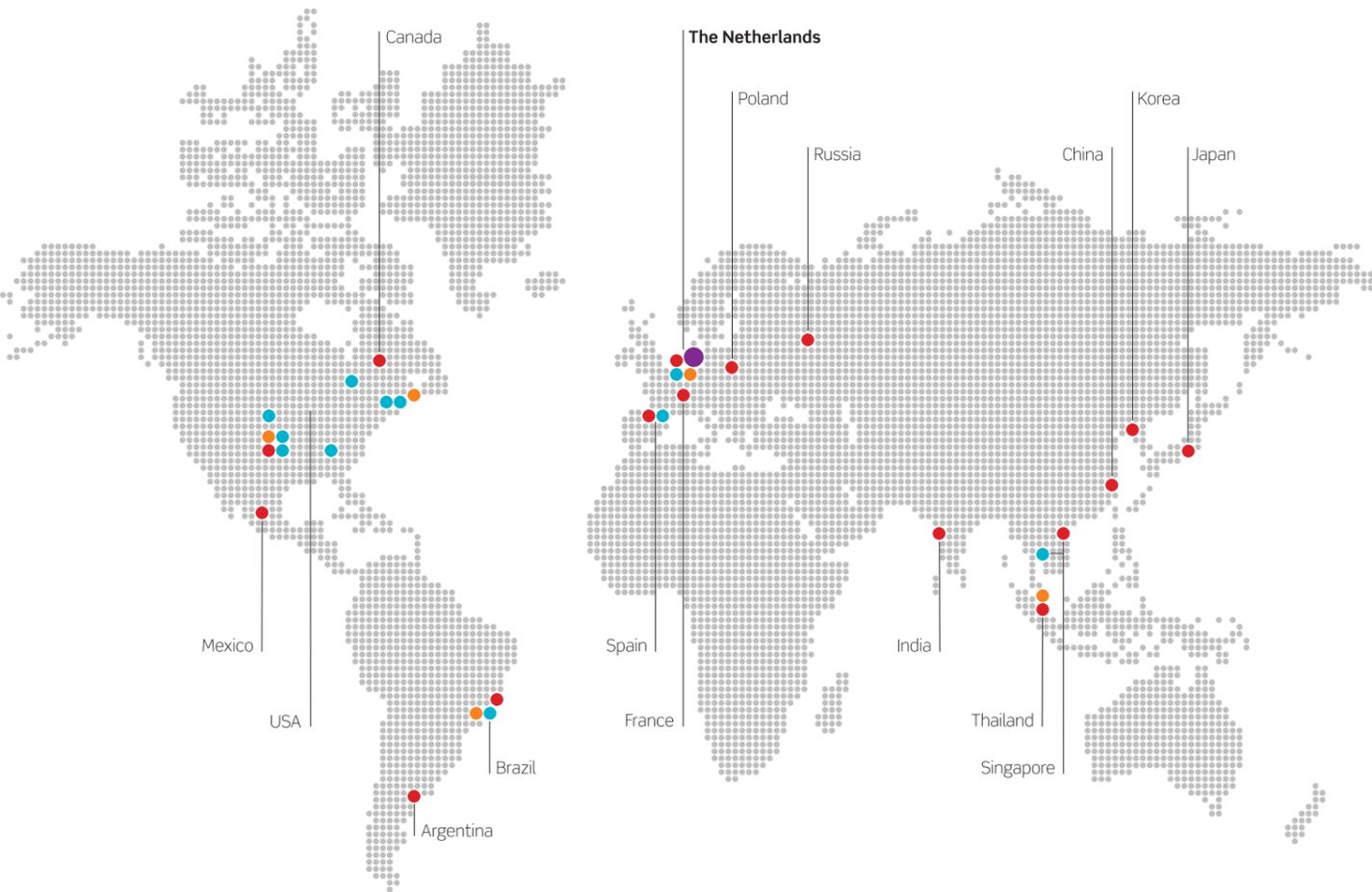


# Global presence

● CORBION HEADQUARTERS ● CORBION PRODUCTION LOCATION ● CORBION SALES OFFICE ● CORBION INNOVATION CENTER



[www.corbion.com/contact](http://www.corbion.com/contact)

## Corbion in Food

With over 80 years of fermentation expertise and the use of natural raw materials to produce exceptional food and beverage ingredients, Corbion Purac has a wealth of expertise in the world of biobased food ingredients. Our extensive portfolio combined with leading expertise, application knowledge and technical service make us your food industry partner, helping solve food integrity issues by providing improvements in shelf life, freshness and food safety.

## About Corbion

Corbion is the global market leader in lactic acid, lactic acid derivatives and lactides, and a leading company in functional blends containing enzymes, emulsifiers, minerals and vitamins. The company delivers high performance biobased products made from renewable resources and applied in global markets such as bakery, meat, pharmaceuticals and medical devices, home and personal care, packaging, automotive, coatings and coating resins. Its products have a differentiating functionality in all kinds of consumer products worldwide. In 2012, Corbion generated annual sales of €753 million and had a workforce of 1,800 employees. Corbion is listed on NYSE Euronext Amsterdam (listing name is CSM). For more information: [www.corbion.com](http://www.corbion.com)

Interested in our solutions? [Go to corbion.com/verdad](http://Go to corbion.com/verdad)

@CorbionFood

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FOOD • 2013117 • THMS-VERDAD-IN-REFRIGERATED-FOOD-USENG-1013

# Verdad®

Nature's choice for today's challenges in refrigerated food products



- Consumer-friendly labeling
- Maximizes taste and flavor
- Stable, fresh foods

Consumers demand increasing quality and quantities of healthier products. New food technologies play an increasingly important role in ensuring that we minimize waste, and supply the world's growing population with adequate, safe and high quality food.

Consumers want prepared foods to be authentic, tasty and fresh, and are turning away from those containing unfamiliar ingredients, or chemical additives (Figure 1).

They rely more on food labels to make their choices and look for 'friendlier' labels on products. Food producers are responding by exploring natural options for food ingredients that are safe, sustainable and reliable.

## The most important properties of food according to consumer research

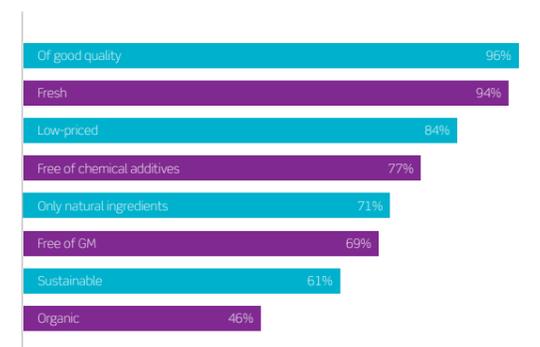


Figure 1

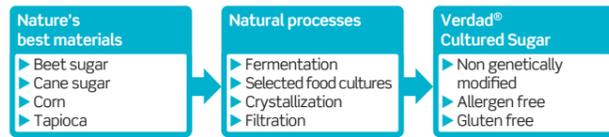
Clean label study 2012, Kampffmeyer



[corbion.com/verdad](http://corbion.com/verdad)

### Verdad® F - Our latest ingredient portfolio

The Verdad® range can be used in a wide range of food products offering numerous benefits through fermentation. With over 80 years of fermentation expertise, Corbion Purac is a leader in this field.



Fermentation and the products of fermentation, are recognized by regulatory authorities as natural and can be labeled as cultured (cane) sugar.

The current clean label portfolio of Corbion Purac consists of Verdad F95 and Verdad Powder F80, which are developed for use in:

- ▶ Refrigerated meals and meal components.
- ▶ Cooking sauces.
- ▶ Refrigerated soups.
- ▶ Deli salads.
- ▶ Dips and spreads.
- ▶ Fillings and stuffing.

The drive for more natural products results in consumer preferences for less processed foods, and creates additional challenges for the industry in ensuring overall quality of products, particularly in terms of the balance between taste and spoilage (Figure 2).

### Preservation system

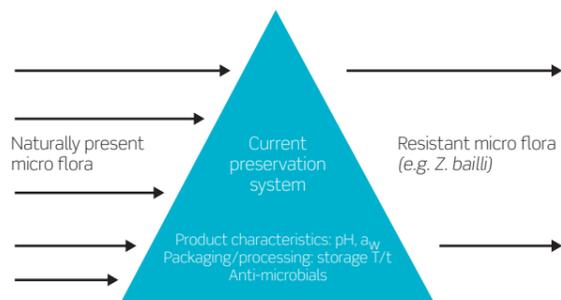


Figure 2

Reducing chemical preservatives removes an important hurdle, which needs to be compensated to ensure the same shelf life. Often extra processing is used, but this can impact the consumer's perception of a 'fresh' product.

### Sensory benefits

Food companies aim to provide consumers with healthy products that are full of flavor. Due to the fermentation of cane sugar, Verdad F contains components which can enhance savory notes, such as tomato, spices and herbs. The range can be particularly useful in creating reduced sodium products.

### Taste and flavor

Fermentation based ingredients are often positively received due to a positive improvement overall flavor profile (e.g. soy sauce). Verdad products can be described as tasting acidic and savory. Figure 3 demonstrates the improvement of savory profile of Spaghetti Bolognese using Verdad F95. The overall sweetness and savory notes were perceived as more positive.

### Verdad and flavor profile in Spaghetti Bolognese

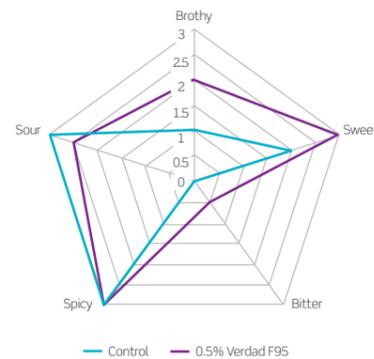


Figure 3



### Stable, fresh foods

Verdad® minimizes the need to use heavy processing (e.g. sterilization). It is optimally effective when used within the framework of the hurdle concept.

### Hurdle technology

Hurdle technology can be an effective means to prevent loss of quality of the food product during shelf life (see Figure 4). Several factors can be adjusted to maximize food protection. These include treatments, such as heating, drying, acidifying, and the inclusion of certain ingredients. Each method, utilized appropriately, can help maintain or extend food integrity during shelf life. And can be even more effective when used in combination.

### Hurdle technology

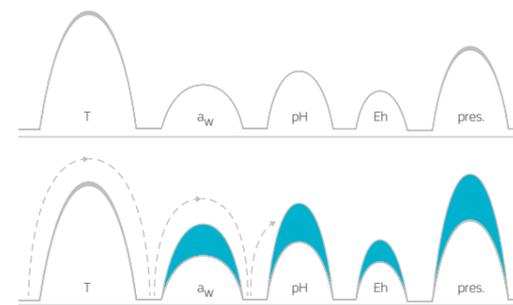


Figure 4

### Shelf life - Product stability

Verdad F95 and Verdad Powder F80 can further enhance the microbial hurdle, as explained. Refrigerated meals, such as ready-to-cook or deli(salads), are typical applications susceptible to spoilage organisms like yeasts and lactic acid bacteria.

Figure 5 and 6 demonstrate the contribution Verdad to product stability during shelf life in different salads (egg, potato). Salads were inoculated with typical spoilage cocktail of organism (*Lactobacillus plantarum*).

### Results Verdad Powder F80, shelf life potato salad at pH 4.8, 4°C/39.2°F

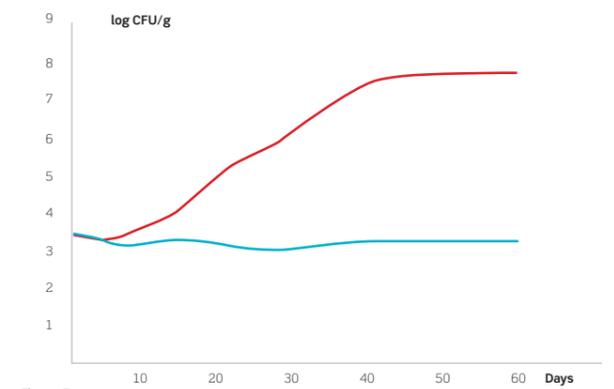


Figure 5

### Results Verdad F95, shelf life egg salad at pH 4.8, 7°C/44.4°F

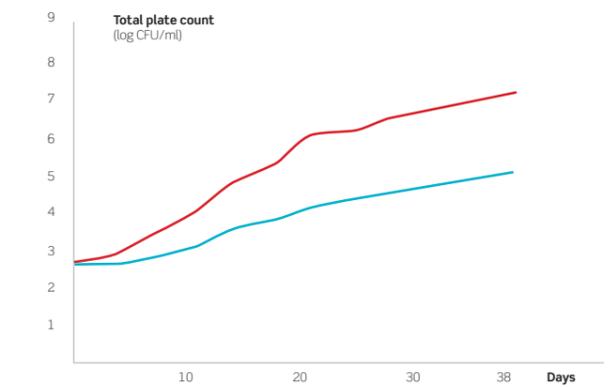


Figure 6

### Verdad portfolio

Verdad	Labeling	Recommended dosage	Benefits
Verdad Powder F80	Cultured/fermented (cane) sugar	0.25 – 0.80%	Consumer-friendly labeling Maintain product shelf life
Verdad F95	Cultured/fermented (cane) sugar	0.50 – 0.90%	Consumer-friendly labeling Maintain product shelf life