

NATstabil[™]

Product list



By **NATUREX**[™]
Ultimate Botanical Benefits



New challenges in food & beverage preservation

Today consumers express their desire for better management of their health and lifestyle. They want innovative products without having to compromise on taste, convenience and safety.

In recent years consumer awareness of health implications relating to food consumption has increased. Even though chemical additives are generally considered as cost-effective and convenient solutions for food processing, consumers unquestionably associate “synthetic” and “chemical” terms with potential hazards, especially when used to qualify food constituents.

Rising consumer interest for all natural food products has quickly become a growing trend driving innovation within the food industry. Naturex has developed an approach to meet both food industry expectations for highly effective protective solutions and consumer demand for all natural food products.

Naturex develops and markets a range of innovative plant extracts able to substitute chemical antioxidants. These natural ingredients extend the shelf life of food and beverage products without adverse effects on taste and visuals, while at the same time allowing for clean labeling.



Rosemary extracts

A natural alternative to chemical antioxidants

Oxidation is a primary cause of food spoilage causing rancidity, discoloration, off-flavors, changes in texture and more generally leads to decreased nutritional value. Chemical antioxidants can prevent a number of these degradation processes. Naturex rosemary extracts manage the issue naturally.

Naturex has developed an extensive range of rosemary extracts which naturally protect food products against oxidation and therefore extend their shelf life. These extracts can be used in a wide range of applications and are effective alternatives to chemical antioxidants.

With Naturex rosemary extracts, you can go natural without compromising on oxidative stability.

Naturex has years of expertise in the extraction of rosemary, backed up by several patents. Naturex Moroccan facility, which is located close to abundant native rosemary fields, is the largest extraction facility in northern Africa, providing Naturex the capacity for the production of large amounts of rosemary extracts.

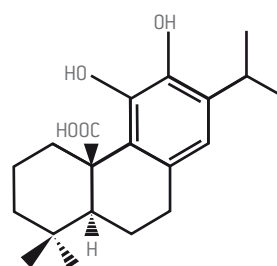
Active compounds from rosemary

One of the significant reactions causing food degradation is free radical chain reaction through which lipids undergo auto-oxidation and produce free-radicals. Free radicals are highly reactive molecules which attack not only lipids but also proteins, pigments and vitamins. The propagation phase of this process is a cascade reaction resulting in rapid deterioration of food.

The effectiveness of most food antioxidants relies on their ability to delay initiation and propagation of oxidation processes through the inhibition of free radical chain reaction.

Carnosic acid and rosmarinic acid, which are the most potent antioxidant compounds found in rosemary, inhibit free radical chain reaction. They can undergo molecular rearrangements to inactivate a number of free-radicals, which explains their strong antioxidant activity.

Luteolin-3'-glucuronide has a very special ability to bind anthocyanins through a process called co-pigmentation. This results in intensified color and increased color stability.



Rosemary extracts

Benefits

Proven efficacy vs. usual antioxidants

Studies conducted by Naturex show that rosemary extract can match the efficacy of best-in-class antioxidants in a number of food products, while still having a low usage level and a reasonable cost-in use.

Consistent efficacy

Relying on the best qualitative tracers is the key to consistent efficacy of rosemary extracts. Carnosic acid is the most potent antioxidant compound from the oil soluble fraction of rosemary. It notably outperforms other phenolic diterpenes such as carnosol or rosmanol.

Rosmarinic acid is the most potent water soluble antioxidant compound from rosemary.

Naturex thus uses carnosic acid and rosmarinic acid as qualitative tracers as it is the only way to guarantee the consistency of rosemary extracts antioxidant properties. Naturex also uses luteolin-3'-glucuronide as a qualitative tracer to ensure quality of specialty extracts dedicated to color enhancement of anthocyanin-based food products.

Improved applicability

Naturex extracts are manufactured in order to allow a perfect solubility of the active ingredients. It promotes the uniform distribution of the active compounds throughout the food matrix and therefore maximizes the efficiency. Naturex rosemary extracts are available in liquid or powder form, with unique formulations adapted to each product application. This includes specific formulations for beverages, injected meats, emulsions, and many more.

No detrimental contribution to flavor

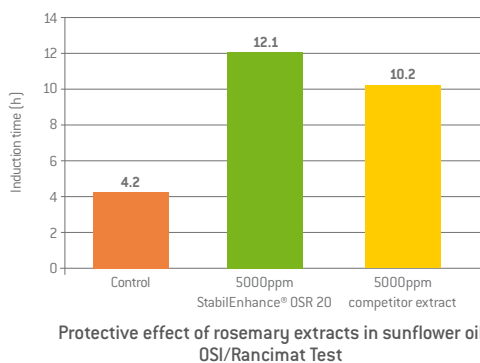
Naturex produces rosemary extracts from patented processes allowing a high level of antioxidant compounds and unique flavor profiles compatible with a broad range of applications. This allows Naturex rosemary extracts to be used in food products in which most of rosemary extracts are not applicable.

Clean label

Naturex rosemary extracts are natural plant extracts allowing consumer-friendly labeling. Depending on country-specific regulations, they can be labeled either "rosemary extract", "natural flavor", or "antioxidant: rosemary extract".



Correlation between carnosic acid/carnosol ratio and protective effect of rosemary extract



The OSI/Rancimat test is an accelerated automated test used for comparative analysis for oils and fat stability. The longer the induction period, the greater the antioxidant efficacy and increased stability.

Rosemary extract	Standardization	Carnosic acid/carnosol ratio
StabilEnhance® OSR 20	20% carnosic acid	12,9
Competitor	20% carnosic derivatives	6,4

Solubility of high-performance StabilEnhance® OSR 2.5 in water and in oil



- 1 Canola oil
- 2 StabilEnhance® OSR 2.5
- 3 1% StabilEnhance® OSR 2.5 in water
- 4 1% StabilEnhance® OSR 2.5 in canola oil

Range

Brand Name	Qualitative tracer			Solubilities available		
	Carnosic acid	Rosmarinic acid	Luteolin-3'-glucuronide	Oil soluble	Oil soluble and water dispersible	Water soluble
StabilEnhance® OSR	✓			✓	✓	✓
StabilEnhance® WSR		✓				✓
ColorEnhance®		✓	✓			✓

Applications

Naturex rosemary extracts can protect food products which are sensitive to oxidation induced by heat, light or pro-oxidant compounds during processing and storage. They can prevent rancidity, flavor degradation and color fading.

StabilEnhance® OSR extracts are particularly effective in food products having a high fat content and/or highly susceptible to fat oxidation.

StabilEnhance® WSR extracts are particularly effective in beverages, emulsions and more generally in food products having a low fat content.

ColorEnhance® extracts are dedicated to color enhancement of anthocyanin-based products.



Main applications	Lines of products		
	StabilEnhance® OSR	StabilEnhance® WSR	ColorEnhance®
Meat & poultry products	✓	✓	
Seafood products	✓	✓	
Beverages		✓	✓
Oils & fats	✓		
Mayonnaise & dressings	✓	✓	
Margarine & spreads	✓		
Snacks	✓		
Baked goods	✓		
Cereals	✓		
Potato flakes	✓		
Fruit preparations		✓	✓
Tomato based products		✓	
Flavors	✓	✓	
Seasonings	✓		
Carotenoids	✓	✓	
Anthocyanins			✓
Pet food	✓		

Fruit & vegetable extracts

Enhance food stability the healthy way

Nature is an unlimited source of active compounds. Fruits and vegetables are acknowledged as a source of healthy antioxidants, including polyphenols and organic acids. While these active compounds are becoming increasingly popular for their health benefits, some of them also demonstrate antioxidant properties for food preservation.

Thanks to its vertical extraction expertise, Naturex has developed an innovative range of fruit & vegetable extracts with a unique profile. They provide a **natural solution for enhancing food shelf life**.

With Naturex new line of fruit & vegetable extracts, you can now protect your food products the healthy way.

Benefits

Efficacy

When used in food products, Naturex fruit & vegetable extracts can enhance both flavor stability and color stability, depending on the applications and the specific oxidation issues. **Their beneficial effect has been proven through studies conducted by Naturex.**

Clean label

These natural ingredients are **fully in line with consumer demand for natural foods**. Extracted from common fruits and vegetables using mild processes preserving plant characteristics and benefits, they can be labeled as fruit/vegetable extracts or as natural flavors depending on country-specific regulations.

Healthy image

Naturex fruit and vegetable extracts naturally add value to food products they are used in. **They compliment food products healthy image** by providing natural antioxidants of which some, as polyphenols, have been popularized for their health benefits.



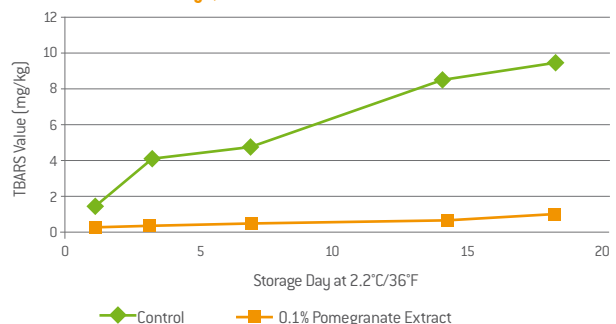
Range

	Product	Form	
		powder	liquid
Natural sources of polyphenols	Onion extract	✓	
	Lettuce extract	✓	
	Pomegranate extract	✓	✓
	Grape extract	✓	✓
Natural sources of organic acids	Acerola cherry extract	✓	
	Lemon extract	✓	

Applications

Main Applications	Natural sources of polyphenols	Natural sources of organic acids
Meat & poultry products	✓	✓
Mayonnaise and dressings	✓	✓
Baked goods	✓	
Fruit preparations		✓

Effect of pomegranate extract on oxidative stability of ground pork
Frozen for 60 days, thawed and stored at 2.2°C/36°F



Scientific & technical means

Scientific excellence

The Naturex scientific development team is working daily on innovations to design customized ingredients guaranteed to meet the safety, performance and expectations of both customers and consumers. Thanks to Naturex in-house product application laboratory and a partnership with a fully equipped meat pilot plant, test kitchen and food application laboratory, we are able to customize our extracts for specific application needs and guarantee the utmost efficacy in your products.



Manufacturing expertise

Naturex consists of eleven production units located on different continents, which favors optimization of the product flow. Naturex operates large scale extraction and formulation equipment allowing for the production of large volumes with short lead times. In addition, with a longstanding experience in the processing of natural raw materials into high-performance ingredients, Naturex translates market demands into opportunities for its customers at an early stage.



Technical support

Naturex has a broad knowledge and understanding of all aspects of product processing and regulations. Naturex's knowledgeable staff can assist with queries relating to dosage levels, application and formulation, shelf life extension and stability tests.



NATUREX

Ultimate Botanical Benefits

Food & Beverage

A business unit specialized in the development of natural flavouring, colouring, preservative ingredients and healthy concepts that are tailored for food and beverage applications.



Nutrition & Health

A business unit specialized in the development of botanical extracts and natural ingredients concept backed by scientific studies for pharmaceutical, dietary supplement and nutraceutical applications.



Personal Care

A business unit specialized in the development of natural ingredient concepts that are backed up with biological studies, botanical extracts and functional raw materials for cosmetic applications.



Made with vegetable based inks - April 2010 Edition

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