



Extending
Shelf life
Naturally

Expertise that Inspires

Licrezz™ natural food ingredient is a licorice plant extract with applications for food and beverages. Licrezz is naturally high in antioxidant phenolic compounds which makes it a versatile ingredient for most types of meat, bakery, dairy and beverage products. Licorice is one of the oldest natural flavorings with a long history of use in traditional foods and medicines. Our innovative ingredient, Licrezz, is extracted from the roots of the licorice plant and is minimally processed. Licrezz can be utilized in foods that are susceptible to oxidation and that can benefit from addition of a natural flavor.

FUNCTIONAL BENEFITS

- Effectively reduces rancidity and development of off-flavors
- Delays oxidation and prolongs shelf life
- Stabilizes color
- Natural ingredient derived from licorice plant
- Works synergistically with phosphates in processed meats to enhance antioxidant properties

PRODUCT GRADES

Licrezz is available as a pure extract (Licrezz FC) and as a blend with an inert natural carrier (Licrezz B). Licrezz FC and Licrezz B are free-flowing light brown powders with characteristic odor.

REGULATORY

Licorice and licorice derivatives are permitted in the U.S. as flavor enhancers and flavor agents. They are affirmed by the FDA as GRAS (Generally Recognized as Safe) in the regulation citation 21 CFR 184.1408. Licrezz is a minimally processed extract from the licorice plant root, so can be considered to be natural by most definitions. Licrezz is Kosher certified and allergen free. Typical usage levels are 200-1000 ppm, depending on the product and application.

TYPICAL PROPERTIES OF LICREZZ

Characteristic	Licrezz FC	Licrezz B
Total Phenolic Content, %	17 minimum	8.5 minimum
Glycyrrhizic Acid, %	1 maximum	0.5 maximum
Total Plate Count	< 5000 CFU/g	< 5000 CFU/g
Coliforms	< 100 CFU/g	< 100 CFU/g
Yeast & Mold	< 100 CFU/g	< 100 CFU/g
Salmonella	Absent / 20 g	Absent / 20 g
Shelf Life	3 years	3 years

APPLICATIONS AND PERFORMANCE

Figures 1, 2 and 3 demonstrate free radical scavenging ability and illustrate Licrezz FC antioxidant functionality compared to BHA and rosemary extract. In Figure 4, Licrezz FC has been found to be very effective in delaying oxidation of nuts. Licrezz FC inhibited oxidative rancidity as effectively as mixed tocopherols at 500 ppm and improved oxidative stability significantly for peanuts and

walnuts at 1000 ppm. Food products that would benefit from this improved stability include packaged nuts, bars, snack mixes, toppings and spreads. Figure 5 compares Licrezz FC performance to BHA, rosemary extract and untreated control in frozen breakfast pork patties. Licrezz FC demonstrated superior performance compared to rosemary extract at the same concentration.

FIGURE 1: ABTS⁺ FREE RADICAL SCAVENGING

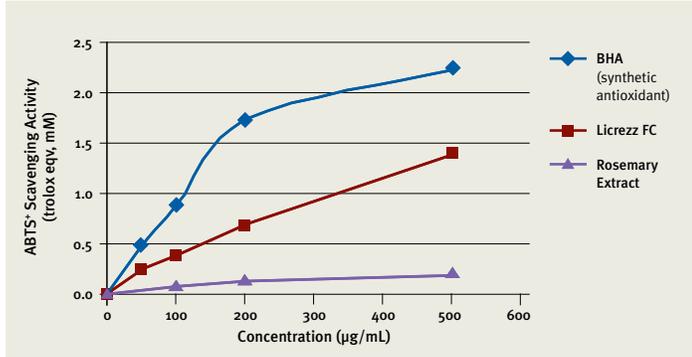


FIGURE 2: •DPPH FREE RADICAL SCAVENGING

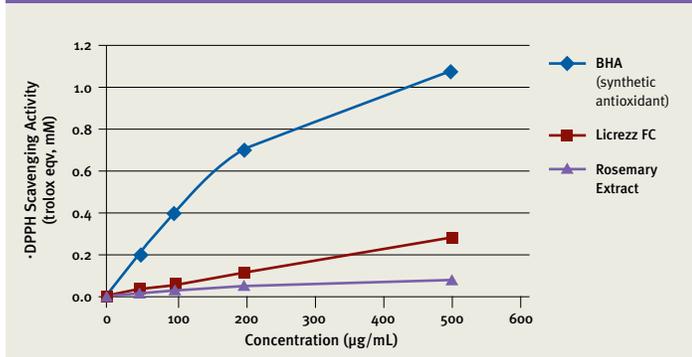


FIGURE 3: •OH⁻ FREE RADICAL SCAVENGING

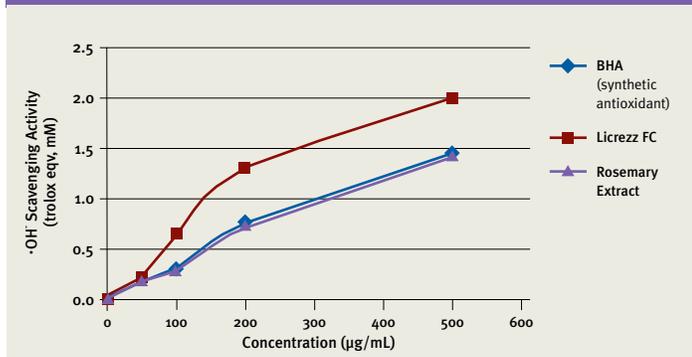


FIGURE 4: RANCI MAT OXIDATIVE STABILITY STABILITY OF PEANUTS AND WALNUTS INDUCTION TEMPERATURE @ 130° C

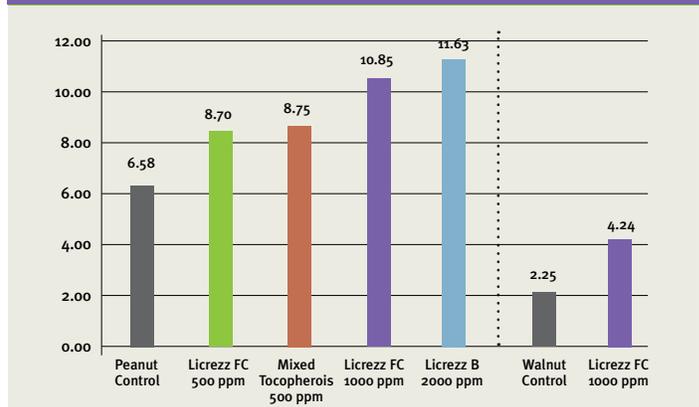
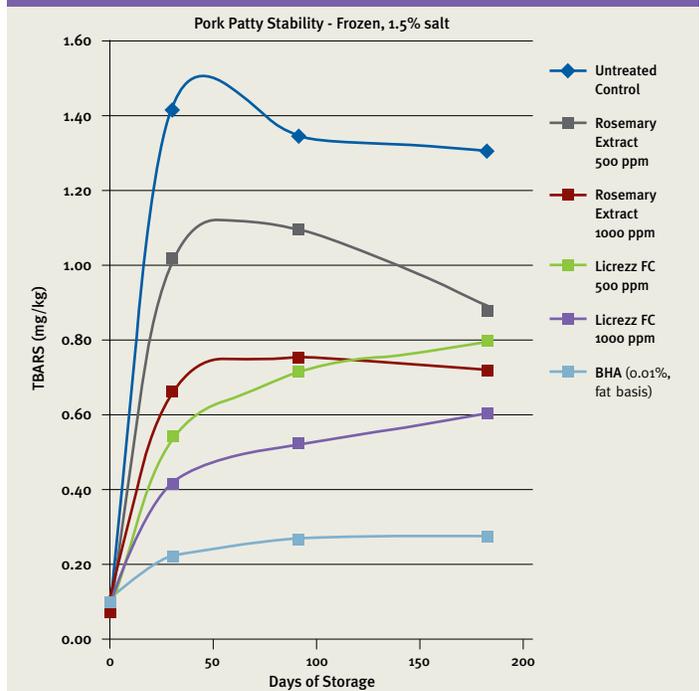


FIGURE 5: EFFECT ON FAT OXIDATION AS MEASURED BY TBARS IN FROZEN PORK PATTIES



For questions and technical service, please call toll free: 1.855.ICL.SPEC or call 314.983.7500 | Email us at: foodexperts@icl-group.com | www.iclfood.com

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should not therefore be construed as guaranteeing specific properties of the products described or their suitability for a particular application. No legal liability shall be derived from it. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our General Conditions of Sale. This product information will not be updated automatically. This information is not intended to provide specific advice on the applications or uses of the products, nor is it intended to provide legal, regulatory or other expert advice relating to the products and its uses (including whether or not a product may be licensed, marketed or sold in a specific country or region). For specific advice on such issues, please consult applicable federal, state and local laws and regulations and your own advisors.

Licrezz™ is a registered trademark of ICL Performance Products LP.