



Product Safety and Quality Dominate Innovation Awards

IFT18 innovation award winners showcase a unique packaging film, natural antioxidant and surrogate bacteria that can enhance food safety, product quality and shelf life.

Advancements to food safety and product quality grabbed the top honors in the IFT18 Food Expo Innovation Awards competition, which culminated with the public announcement and presentation of the awards to Handary S.A., Kancor Ingredients Ltd., and Novolyze.

The 2018 IFT Food Expo Innovation Awards were presented to the three companies at the awards ceremony by IFT President-Elect Pam Coleman and IFT President 2017–2018 Cindy Stewart. “Now in its 12th year, the Food Expo Innovation Awards program is a showcase for amazing advancements in our profession,” said Coleman. “Exclusive to companies exhibiting at the IFT18 Food Expo here in Chicago, these awards honor outstanding innovation in products, ingredients, technologies, instrumentation, equipment, and services that were commercially introduced since January 1st of 2017.”

A panel of 11 jurors—chaired by Jacqueline Beckley—from academia, government, and industry with wide expertise in research & product development, processing and packaging technology, and food safety selected the three companies and their innovations from 42 qualified entries. Judging criteria included degree of innovation, technical advancement, benefits to food manufacturers and consumers, and scientific merit.

Antimicrobial Film

Handary S.A. captured the 2018 IFT Food Expo Innovation Award for its

Antipack™ active antifungal biodegradable film, which can prevent mold growth by gradually releasing fermented sugar activities from the film onto the surface of solid foods such as semi and hard cheeses and dried sausages during their shelf life. The biodegradable and recyclable film utilizes an advanced controlled-released technology to combine poly lactic acid (PLA), fermented sugars, food cultures and fungal chitosan.

PLA is produced by the polymerization of lactic acid from sugarcane, while

the fermented sugar is made from corn sugar fermented with food cultures *Lactobacillus paracasei* and *Propionibacterium freudenreichii* subsp. *shermanii*. Fungal chitosan is produced from the oyster mushroom and is water-soluble with a pH of 3.5.

Most molds require the presence of considerable moisture for growth. The controlled-released technology utilizes this moisture (relative humidity) to manage the migration of fermented sugar from the film onto the solid food surface. In addition, regulating the blending ratio of PLA and water-soluble chitosan-containing antifungal probiotics and adjusting the hydrophobic properties of fungal chitosan helps to control the migration rates of fermented sugar from the film onto a food surface.

The 90% transparent film can extend the shelf of life of products, and has a minimal effect on the taste, flavor, or color of foods. It has good heat-sealing properties and hot tack (max. 160°C) in automatic packaging.

A juror called the product “a novel combination of technology to create a unique packaging film.” Another juror stated, “The product is biodegradable, extends shelf life and potentially reduces the adverse effects of current plastic-based packaging material.”



Antipack™ biodegradable film can prevent mold growth by gradually releasing fermented sugar from the film onto the surface of semi and hard cheeses.

Natural Antioxidant

Kancor Ingredients Ltd. was honored for its OxiKan CL - natural antioxidant solution. The rosemary-based ingredient can extend the shelf life of a variety of products without imparting color, flavor or



OxiKan CL - natural antioxidant solution can extend the shelf life of a variety of products without imparting color, flavor or aroma—even at dosages up to 400 ppm.



aroma—even at dosages up to 400 ppm. Available in water-soluble and oil-soluble versions, the natural liquid extract is well suited for products that are sensitive to aroma, color and flavor, such as specialty fats, omega-3 fortified products, popcorn, and beverages.

In a comparative study on the shelf-life enhancement and oxidative stability of popcorn, OxiKan CL was tested against a natural tocopherol and a synthetic TBHQ. The study was conducted using two different dosages of OxiKan CL in canola oil. One dosage of the natural antioxidant was at the same level as the other antioxidants, while the other dosage was at a significantly lower level. OxiKan CL successfully outperformed natural tocopherol at a fraction of its dosage. It also demonstrated increased effectiveness in enhancing the shelf life of sensitive foods by outperforming TBHQ in popcorn stability.

Another study looked at the color impact of rosemary extract and OxiKan CL in medium chain triglyceride oil. Rosemary extract had a significant impact on the color of the oil at standard recommended dosage levels of 200 ppm,

while OxiKan CL had no visible impact at the same dosage level as well as double the dosage level.

“Industry is in need of no-flavor, no-color clean label antioxidants that really work,” noted a juror. “It solves an important problem of strong flavor and color of natural antioxidants.” Another juror stated, “A natural flavorless, odorless antioxidant is a big leap!”

Convenient Surrogate Bacteria

Novolyze garnered the 2018 IFT Food Expo Innovation Award for its SurroNov[®] dried, ready-to-use surrogate bacteria, which are harmless microorganisms that mimic the inactivation of foodborne pathogens such as *Salmonella*, *Listeria* and *E. coli* under different kinds of stress. Due to their safety, the surrogates can be used directly at the processing plant or pilot scale to test the efficacy of

microbial kill steps and intervention steps such as extrusion, pasteurization, drying, and roasting.

The convenient powdered product does not require any further enrichment before being inoculated. It is available in large quantities and initial concentrations of up to 10-log CFU/g, allowing users to inoculate up to several tons of food matrix while reaching high target inoculation levels. This is especially beneficial for testing continuous, high-throughput processes.

In a study of a dry cat kibbles product (moisture 4.15%, a_w 0.473), the SurroNov[®] surrogate bacteria was evaluated for thermal inactivation versus *Salmonella*. The first step was to rehydrate the kibbles to achieve a targeted level of moisture content of 15% and a water activity of 0.85. Thermal death dynamics of the tested surrogate products and a mixture of four different *Salmonella* serotypes were estimated after product inoculation using a dry heater apparatus at three temperatures (80°C, 90°C and 100°C).

The surrogate bacteria showed a greater thermal resistance than the *Salmonella* cocktail for each tested temperature. D-values confirmed that the surrogate bacteria had a higher decimal reduction time than *Salmonella*. Thus, the analysis verified the appropriateness of the SurroNov[®] product for process validation as a surrogate microorganism versus *Salmonella* in the tested conditions.

According to a juror, the surrogate bacteria solves a real problem faced by industry and it has the ability to help ensure product safety. “Really innovative,” declared a juror. “It changes quality measurements in manufacturing and makes food safer ... scientifically cool.” **FT**



SurroNov[®] dried, ready-to-use surrogate bacteria are packaged in a multilayered stand-up pouch for maximum shelf life and ease of use.

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