

#### Proven Soy-Based Ingredients FUNCTIONALITY TESTING AT A GLANCE

## **HIGH OLEIC SOYBEAN FRY EVALUATION**

High oleic soybean oil was a **top performer** during a 24-day functionality and sensory study testing french fries prepared in:

- High Oleic Soybean Oil
  High Oleic Sunflower Oil
  Mid Oleic Sunflower Oil
- Conventional Soybean Oil
- 75% Oleic Canola Oil
- 65% Oleic Canola Oil

High oleic soybean oil's overall performance was consistent with high oleic sunflower oil and outperformed other high-stability options, such as 75% oleic canola oil.

High oleic soybean oil presented one of the lowest levels of total polar materials (TPM) percentages and polymerization in the test. After 24 days of frying, high oleic soybean oil left less than 5% polymerization on the equipment, translating to less equipment maintenance.

High oleic soybean oil was a top performer on overall likeability in a taste test which evaluated various sensory characteristics of trench fries, such as flavor, aroma, texture and appearance.

# HIGH OLEIC BLENDS EVALUATION

A nine-month fry study evaluated blends of peanut, cottonseed, corn and soybean oils with high oleic soybean oil. The blended oils contained incremental amounts of high oleic soybean oil that demonstrated its impact on increasing the fry life of conventional oils while maintaining flavor characteristics and cutting cost.

The study showed that blending high oleic soybean oil with conventional frying oil extends the Oxidative Stability Index (OSI) of the oil, increasing shelf and fry life.



Functionality Testing at a Glance



#### DONUT FRYING Evaluation

High oleic soybean shortening produced donuts similar in texture, interior grain, spread, height and size to partially hydrogenated soybean oil in both cake and yeast-raised donut frying studies.



Cake and yeast-raised donut frying studies prove that donut fry shortening made with high oleic soybean shortening performs similarly to traditional shortenings made with partially hydrogenated oils. The studies compared partially hydrogenated soybean oil (approximately 31% trans fat), a palm/ soy blend, conventional soybean shortening and high oleic soybean shortening.

High oleic soybean shortening produced donuts similar in texture, interior grain, spread, height and size to partially hydrogenated soybean oil in both cake and yeast-raised donut frying studies.

The TPM of high oleic soybean shortening was similar to partially hydrogenated soybean oil and significantly outperformed the palm/soy blend.



#### BAKERY APPLICATION EVALUATION

A 12-month shelf life study evaluated the oxidative stability, application review and texture analysis of high oleic soybean, high oleic canola, conventional soybean, canola, partially hydrogenated and palm bakery shortenings.

*High oleic soybean shortening showed the least amount of change in texture compared to alternatives, including partially hydrogenated oil.* 

High oleic soybean shortening produced the most similar viscosity and specific gravity, the measure of air added, to partially hydrogenated shortening. Icing made with high oleic soybean shortening is smooth, light, provides less color bleeding and is easy to decorate with. Cookies made with high oleic soybean and conventional soybean shortenings had a more tender mouthfeel.

Cakes made with high oleic soybean shortening were most similar to cakes made with partially hydrogenated shortening.

#### PUFF PASTRY AND PIE CRUST EVALUATION

Soy-based baker's margarines, formulated with high oleic soybean oil or conventional soybean oil or combinations of both, outperformed palm and partially hydrogenated oil in puff pastry applications in terms of finished bake height and structure, as well as desired honeycomb texture, which adds to overall likeability.



Soy-based ingredients performed on par with butter, which is considered the *"gold standard"* for puff pastry.

Puff pastries made with high oleic soybean baker's margarine produced the ideal height and even honeycomb layers.

High oleic soybean shortening produced pie crusts with desired characteristics, including evenly browned textured, flaky crust with an ideal finished product height and minimal shrink.



### **COMPARISON OF FATTY ACID PROFILES**





16305 Swingley Ridge Road, Suite 200 Chesterfield, MO 63107- U.S.A.

Phone: 636.449.6400 | fax: 636.449.1292 ussec.org | ussoy.org