SOYBEAN OIL INNOVATIONS: COMING TO A PLATE NEAR YOU

A GUIDE FOR HEALTH PROFESSIONALS
Soybean oil is one of the most abundant vegetable oils in the world. In fact, most “vegetable oil” available on grocery store shelves is U.S.-grown 100 percent soybean oil. Conventional soybean oil contributes 0 grams trans fat per serving and is a principal source of alpha-linolenic acid (ALA), an omega-3, in the U.S. diet.

Improvements in the health profile of soybean oil could positively impact the public due to its anticipated extensive use in the foodservice and food manufacturing industries. It is important for health professionals to be aware of these improvements and what they mean to their patients and clients.

People want to eat healthier and are looking for simple ways to do it. The soybean industry is committed to making it easier for food companies to deliver products that meet consumer health and nutrition needs – starting with better-for-you oil solutions. New soybean varieties produce oils with an improved fat profile and functionality.

**Soybean Oil Reaches New Heights**

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**Consumers Want to Eat Healthier**

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**Fats Consumers View as Very or Somewhat Healthy**

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<tbody>
<tr>
<td>Omega-3 fatty acids</td>
<td>79%</td>
<td>84%</td>
<td>77%</td>
<td>79%</td>
<td>77%</td>
<td>74%</td>
<td>89%</td>
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<tr>
<td>Polyunsaturated fat</td>
<td>39%</td>
<td>39%</td>
<td>40%</td>
<td>37%</td>
<td>39%</td>
<td>37%</td>
<td>39%</td>
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<tr>
<td>Monounsaturated fat</td>
<td>10%</td>
<td>9%</td>
<td>8%</td>
<td>11%</td>
<td>10%</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>Hydrogenated vegetable oils</td>
<td>15%</td>
<td>20%</td>
<td>19%</td>
<td>14%</td>
<td>12%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Trans fat</td>
<td>9%</td>
<td>8%</td>
<td>15%</td>
<td>9%</td>
<td>16%</td>
<td>9%</td>
<td>16%</td>
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<tr>
<td>Saturated fat</td>
<td>8%</td>
<td>8%</td>
<td>13%</td>
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Substituting saturated fat with monounsaturated fat improves insulin sensitivity and reduces plasma triglycerides, making it an important dietary modification for those at risk of metabolic syndrome.

High oleic soybean oil is a significant provider of vitamin E and contains a number of phytosterols, including β-sitosterol, campesterol and stigmasterol.

High in MUFAs, high oleic soybean oil is stable and does not require hydrogenation, making it a better-for-you replacement for saturated fats.

MUFAs, such as oleic acid, benefit heart health when eaten in moderation and used to replace saturated fats or trans fats. MUFAs may also help reduce LDL levels in the blood, reducing the risk of heart disease and stroke.

Studies have shown that MUFAs reduce blood pressure. It has been demonstrated that the oleic acid component contributes to this hypotensive effect.

In addition, a recently completed human feeding study suggests that high oleic soybean oil acts similarly to conventional soybean oil in lowering LDL cholesterol and total cholesterol when compared to a palm oil.

High oleic soybean oil’s fat profile features lower saturated fat while maintaining 0 grams trans fat per serving.

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High oleic soybean oil offers an improved fat profile and functionality as well as 0 grams trans fat per serving. The oil allows foodservice operations and food manufacturers to eliminate the use of trans fats while providing superior performance and stability.

High oleic soybean oil delivers three times the amount of beneficial monounsaturated fatty acids (MUFAs) compared to conventional soybean oil, which may benefit heart health. A high MUFA content makes the oil extremely stable, eliminating the need for partial hydrogenation.

High oleic soybean oil is available now. Today, U.S. soybean farmers collaborate with seed technology companies to ramp up crop production and accelerate the supply of high oleic soybeans. The available high oleic soybean oil supply is expected to reach one billion pounds in the next three years and 9.3 billion pounds within the next decade. QUALISOY® projects the supply of U.S.-grown high oleic soybean oil will be greater than other high oleic offerings due to the amount of available soybean acreage in North America.

High oleic soybean oil was commercialized in 2011 and is available now. Quantities are increasing and expected to reach an estimated 1 billion pounds by 2020.

U.S.-GROWN HIGH OLEIC SOYBEAN OIL IMPROVES PRODUCT NUTRITION

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ENHANCED SOYBEAN OILS IN THE PIPELINE: INCREASED OMEGA-3

Omega-3 fatty acids are both essential and beneficial for human health. Research shows diets rich in omega-3 fats reduce inflammation and may help lower risk of chronic diseases such as heart disease.17

The long-chain omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), found primarily in fatty fish and marine sources, are most readily used by the body. Although ALA, the type of omega-3 found in soybean oil, is the principal source of omega-3s in the U.S. diet18, ALA is not efficiently converted to EPA and DHA in the body.

Companies are developing soybeans that contain stearidonic acid (SDA), an omega-3 fatty acid. SDA omega-3s are more efficiently converted by the body into EPA than the ALA omega-3s found in plant sources.

This variety of soybeans will result in an affordable, land-based, renewable source of omega-3s.

The aim is to produce neutral-flavored soybean oil with 18 to 20 percent SDA. This SDA omega-3 soybean oil will provide the food industry with a functional ingredient that can be added to a variety of foods, such as soups, sauces, beverages, yogurts and breads.

Incorporating this type of omega-3 in foods could have tremendous public health benefits.19-20

ALA Conversion Chart

The body skips the ALA conversion step when consuming products made with SDA omega-3 soy.

<table>
<thead>
<tr>
<th>OIL</th>
<th>ALA</th>
<th>SDA</th>
<th>EPA</th>
<th>DHA</th>
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<tbody>
<tr>
<td>Alpha-Linolenic Acid</td>
<td>Stearidonic Acid</td>
<td>Eicosapentaenoic Acid</td>
<td>Docosahexaenoic Acid</td>
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Non-Enhanced Oil
SDA Omega-3 Soybean Oil

INCREASED OMEGA-3 OIL HIGHLIGHTS

- Companies developing these soybean varieties aim for an omega-3 content of 18 to 20 percent.
- Omega-3 fatty acids have potent anti-inflammatory effects that guard against coronary heart disease and autoimmune diseases.21
- SDA omega-3 soybean oil is an effective and environmentally sustainable approach to increasing heart-healthy levels of EPA in the body.22
The soybean industry is constantly working with academic researchers and industry experts to improve the nutritional profile and functional characteristics of soybean oil.

**HEALTH AND ENVIRONMENTAL BENEFITS THROUGH BIOTECHNOLOGY**

Soybean oils developed through agricultural biotechnology can help consumers lead a healthier lifestyle; for example, it increases omega-3 fatty acid consumption and reduces saturated fat consumption. Agricultural biotechnology helps farmers provide a sustainable future for the world’s agriculture systems. Studies show that biotechnology significantly reduces agriculture’s impact to the environment, contributing to increased use of conservation tillage, improved water quality, conservation of topsoil and reduced pesticide use.23

**Consumers and biotechnology**

In the 2017 United Soybean Board Food Industry Insights annual survey, 32 percent of consumers believe modifying food through biotechnology is somewhat to very positive. Top reasons why include larger crop yields (15 percent), making food healthier (19 percent) and helps people (22 percent).

QUALISOY BRINGS IMPROVED OILS TO MARKET

QUALISOY is an independent, third-party collaboration that promotes the development of and helps build the market for the latest soybean traits. One main focus is providing the foodservice and food manufacturing industries with enhanced soybean oils that offer an improved fat profile and functionality. QUALISOY is guided by representatives from all sectors of the soybean industry, including farmers, seed companies, researchers, food manufacturers, soybean processors, agricultural organizations and trade associations.

The diverse group behind QUALISOY ensures the entire soybean value chain is involved in the development of enhanced soybean oils. This unique partnership also drives research, evaluates new and emerging technologies, facilitates stakeholder relations and encourages adoption of beneficial soybean varieties.

QUALISOY is your partner in oil innovations and serves as your source for information on the latest oil traits.
References:
2. 2017 United Soybean Board Food Industry Insights annual survey.