

## **Soy Lecithin Fact Sheet**

### **COMPOSITION**

Soy lecithin consists of three types of phospholipids; phosphatidylcholine (PC), phosphatidylethanolamine (PE) and phosphatidylinositol (PI). It is extracted from soybean oil and is generally used as a natural emulsifier or stabilizer in various food applications.

### **PROCESSING**

Lecithin is a combination of naturally-occurring phospholipids, which are extracted during the processing of soybean oil. The soybeans are tempered by keeping them at a consistent temperature and moisture level for approximately seven to 10 days. This process hydrates the soybeans and loosens the hull. The soybeans are then cleaned and cracked into small pieces and the hulls are separated from the cracked beans. Next, the soybean pieces are heated and pressed into flakes. Soybean oil is extracted from the flakes through a distillation process and lecithin is separated from the oil by the addition of water and centrifugation or steam precipitation<sup>1</sup>.

### **FUNCTIONAL BENEFITS**

Lecithin is utilized in a wide variety of food and industrial applications. The French scientist, Maurice Gobley, first discovered the substance in 1850, and named it "lekithos," the Greek term for egg yolk. At the time, eggs provided a primary source of commercially-produced lecithin. Today, the majority of lecithin used in food applications is derived from soybeans.

Soy lecithin offers a multifunctional, flexible and versatile tool. It is probably best known for its emulsifying properties, which help promote solidity in margarine and give consistent texture to dressings and other creamy products. Lecithin is also used in chocolates and coatings and to counteract spattering during frying. Additionally, its unique lipid molecular structure makes lecithin useful for pharmaceutical and cosmetic applications and various industrial uses such as paints, textiles, lubricants and waxes.

### **HEALTH BENEFITS & CLAIMS**

Lecithin provides an excellent source of choline, which is essential to every living cell in the body and is one of the main components of cell membranes. Not only is dietary choline important for the synthesis of the phospholipids in cell membranes, it is also necessary for methyl metabolism, cholinergic neurotransmission, transmembrane signaling, and lipid-cholesterol transport and metabolism<sup>2</sup>. Without choline, the cell membranes would harden, prohibiting important nutrients from entering and leaving the cell. Scientists believe lecithin and choline may aid in memory and cognitive function, cardiovascular health, liver function, reproduction and fetal development and physical and athletic performance.

In 1998, the Institute of Medicine (IOM) of the U.S. National Academy of Sciences identified choline as an essential nutrient and recommended daily intake amounts<sup>3</sup>. And, in 2001, the U.S. Food and Drug Administration (FDA) approved a nutrient content claim for choline, enabling food manufacturers to inform their consumers via the food label.

Foods that contain over 110 mg of choline per serving may claim that they are an "excellent source of choline" and those with over 55 mg may claim that they offer a "good source of choline<sup>4</sup>."

### **ALLERGENICITY**

The allergens in soybeans reside in the protein fraction of the bean. The allergenic potential of specific soyfoods and/or ingredients is largely based on processing techniques and the amount of protein or protein residue remaining in the final product<sup>5</sup>. The majority of soy lecithin used in food applications is derived from refined soybean oil that has been processed using the hot-solvent extraction technique, which eliminates most, if not all, allergenic proteins.

In 1998, Awazuhara et al published a study on the antigenicity of the residual proteins in soy lecithin and soybean oil, in which they tested soybean-sensitive individuals for reactions to soybean oil and soy lecithin. Researchers investigated the IgE- and IgG4-binding abilities of the soy lecithin and concluded that the proteins in soy lecithin have little antigenicity in regard to soybean allergy<sup>6</sup>.

Although limited data exist on the allergenicity of soy lecithin, Steve Taylor, PhD, head of the Department of Food Science and Technology at the University of Nebraska and co-director of the Food Allergy Research Resources Program, concludes that, "avoidance is probably unnecessary for most soy-allergic individuals<sup>7</sup>."

### **CONCLUSION**

Soy's healthy image extends beyond soyfoods and carries over to byproducts of the bean itself, such as soybean oil and lecithin. The discovery of specific health benefits continues, making soy a welcome sight on ingredient labels. Not only does soy present a potential marketing advantage, but the abundant supply of soybeans guarantees that ingredients such as lecithin are readily available and cost effective.

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2. Zeisel, SH. Choline: needed for normal development of memory. *J Am Coll Nutr*. 2000; 19: 528S-531S.
3. Institute of Medicine and National Academy of Sciences USA: 'Dietary Reference Intakes for Folate, Thiamin, Riboflavin, Niacin, Vitamin B12, Panthothenic Acid, Biotin, and Choline.' Washington DC: National Academy Press, 1998.
4. University of Illinois Functional Foods for Health Program, Regulatory Update: "Best Food Sources for Choline – FDA Authorizes New Content Claim for This Essential Nutrient." [Http://www.ag.uiuc.edu/~ffh/Best\\_Food\\_Sources\\_of\\_Choline.html](http://www.ag.uiuc.edu/~ffh/Best_Food_Sources_of_Choline.html)
5. Bush, Taylor, Nordlee, Busse. Soybean oil is not allergenic to soybean-sensitive individuals. *J Allergy Clin Immunol*. 1985; 76: 242-245.
6. Awazuhara H, Kawai H, Baba M., Matsui T , Kamiyama A. Antigenicity of the proteins in soy lecithin and soy oil in soybean allergy. *Clin Exp Allergy*. 1998; Vol. 28, Issue 12: 1559-1564.
7. Taylor, SL, Kabourek, JL. Soyfoods and allergies: separating fact from fiction. *The Soy Connection*. 2003; Vol. 11, No. 2.

*This informational fact sheet is provided by the United Soybean Board, a farmer-led organization comprised of 61 farmer-directors. USB oversees the investments of the soybean checkoff on behalf of all U.S. soybean farmers. For more information, please visit [www.talksoy.com](http://www.talksoy.com).*