

# QSSB Health and Nutrition Outreach

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### Article

#### *The Value and Use of Soy Protein Ingredients*

*By Michelle Braun, PhD*

Soy ingredients provide an opportunity to carry the harvest forward. The power of the soybean is reaped for use in foods through processing innovation. Over a third of the soybean is composed of high-quality protein that is released after the oil is extracted. These remaining soy flakes are further processed in a manner to produce protein ingredients that each have unique nutritional and functional attributes. The range of versatile food ingredients that contribute the protein from soy to a wide variety of foods are described here.

Food-grade defatted flakes can be processed to produce **soy flour** which may be further processed through extrusion to textured vegetable protein (TVP). These ingredients are ~50% protein (dry basis) and can contribute additional protein to baked products, cereals or snacks. TVP is used extensively as a meat substitute or in combination with meat in home recipes and food manufacturing.

Soy protein concentrates and isolates are ingredients that are further processed to deliver the high-quality protein from soy in ingredients with enhanced functionality for use in a wide array of food applications. **Soy protein concentrate** is ~65% protein (dry basis) and a source of dietary fiber that is available in powdered or textured formats. It is used extensively to provide meat-like texture and as a water or fat-binding ingredient in processed meat and plant-based meat alternatives. It can also be incorporated into cereal and snack products to increase protein content.

**Soy protein isolates** are the purest form of protein at ~90% protein (dry basis) and are highly versatile, protein-enhancing ingredients used in a wide range of food and beverage applications. Soy protein isolates display a wide range of functionality, a neutral flavor and are precisely designed to work optimally in specific end applications. They are used extensively to boost the protein content of a variety of beverages, nutritional bars, snacks, cereals, plant-based meat and dairy alternatives. Additionally, they are used as functional protein ingredients in processed meat products as well as for fat emulsification in products like soups and coffee creamers.

These ingredients have been utilized for many decades to enhance the nutrition of many unique and familiar foods available in the marketplace. They are considered high-quality proteins and have been the focus of much of the clinical research supporting the nutritional benefits of soy. Yet they continue to evolve to meet the needs of current consumers, providing great tasting plant-based nutrition in products that consumers buy specifically for their protein content.

Soy proteins can be used to boost the protein content and quality of foods and recipes. Soy proteins can also provide the basis for new nutritional foods and beverages targeting the specific protein needs of different segments of the population, from children to adults. As awareness of the importance of protein expands and demand for protein-enhanced foods grow, soy protein provides food manufacturers and consumers an important source of high-quality, plant-based protein that can deliver this essential nutrient.

# Soy-Based Ingredients & Their Uses



## Defatted Soy Flour

*Protein: 50% (dry basis)*

Textured vegetable protein, baked products, sweet baked goods, extruded snacks



## Soy Protein Concentrate

*Protein: 65% (dry basis)*

Beverages, processed meat products, plant-based meat alternatives, cereals, snacks



## Soy Protein Isolate

*Protein: 90% (dry basis)*

Infant formula, baby foods, powdered and liquid beverages, processed meat products, plant based meat and dairy alternatives, dietary supplements, hospital feeding, cereals and snacks.

## These ingredients come in a variety of textures.

### Powders



This is a versatile form of soy that is most used in general protein fortification. It offers functional properties (i.e., emulsification, gelling, solubility) for beverages, extrusion, add protein to meat/poultry foods, plant-based meat alternatives, and general protein fortification.

### Crisps/ Nuggets



These add crispy, crunchy texture to nutrition bars, cereals, and snacks and are available in a variety of forms, flavors, and amount of protein.

### Textured Soy Protein Concentrate



TSP is available in flakes, granules, and crumbles. It is used in ground meat and poultry mixes, as well as plant-based meat alternatives.

### Structured Vegetable Protein



This form of soy can mimic whole-muscle textures. It is available in shreds, chunks, or strips for meat and plant-based meat alternative applications.

**SOY**

Bio:

Michelle Braun is a nutrition scientist who leads Global Protein Scientific Affairs for IFF. She plays an active role in research, education and outreach across the food, nutrition and

agriculture sectors. Michelle earned her Doctorate and Masters degrees in Foods and Nutrition from Purdue University with a BS in Nutrition Science from Indiana University. Her career has been a journey enriched with experiences in teaching, research, scientific affairs and science communication. Michelle currently serves as the Board President of SNI Global. She lives and works in Indiana, based out of her family farm that raises soy, corn and beef.



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