“Fiber is the new protein” was identified as one of the Top Five Natural Health Trends for 2016 (Canadian Health Food Association, 2016). A separate survey found that 79% of consumers are interested in getting more fiber, while 36% recognize ‘high in fiber’ as an important product claim (Health Focus International Global Trend Study, 2015). It is no surprise then, that the global dietary fiber market is expected to reach US$4.3 billion by 2020, based on an annual growth rate of 13% (Markets and Markets, 2016).

A diet high in fiber is linked to successful aging. In a ten-year study with participants 49 years and older, those who had the highest intake of fiber had a greater likelihood of living a long and healthy life (Gopinath et al, 2016).
The average person consumes just half of the 25-38 grams of dietary fiber recommended by the US Food and Drug Administration (FDA) and Health Canada. This ‘fiber gap’ (Jones, 2014) may disrupt our gut microbiota and this ‘dysbiosis’ may be linked to a rise in obesity, cardiovascular disease, some colon cancers, allergies, and asthma (Logan et al, 2016).

How to fill the ‘fiber gap’? In one research study, transitioning African Americans to a traditional South African diet containing 55 grams of dietary fiber per day improved markers of colon cancer within just two weeks (O’Keefe, 2015). In short, higher fiber intakes help to maintain microbial diversity (Simpson and Campbell, 2015).

When choosing a dietary fiber, functionality, sensory impact, consumer preferences, potential structure and function claims, as well as regulatory approvals all need to be taken into account. Among the options, pea hull fiber has been gaining traction as a clean-label, consumer-friendly ingredient that has approvals from the US Food and Drug Administration (FDA), the US Department of Agriculture Food Safety and Inspection Services (USDA FSIS), and Heath Canada.

**NAVIGATING THE 2016 FDA DIETARY FIBER DEFINITION**

In May 2016, the US FDA shook up the fiber industry with its final rule on Nutrition and Supplement Facts Label Regulations (FDA, May 2016). Several previously approved fibers were excluded from the new definition. The FDA’s dietary fiber regulations were based on an Institute of Medicine report (IOM, 2002) which defines total fiber as the sum of dietary fiber and functional fiber:

1. ‘Dietary fiber’ is non-digestible carbohydrates (more than three monomeric units) and lignin that are ‘intrinsic and intact’ in plants. This category includes fruits, vegetables, whole grains, legumes [pulses], and nuts, as well as non-digestible carbohydrates present in fiber-containing foods that are produced using mechanical processes and still considered food.

   The dietary fiber content of the ‘outer [seed] coat of peas’ (also referred to as testa or hulls) which is produced using a mechanical process (milling or grinding) and therefore retains all nutrients, is considered ‘intrinsic and intact’ and may be included in ‘total fiber’ on the nutrition facts label (FDA, November 23, 2016).

2. ‘Functional fiber’ is isolated or synthetic non-digestible carbohydrates (more than three monomeric units) that have been determined by FDA to have a physiological benefit to human health. These include synthetic non-digestible carbohydrates or isolated or extracted non-digestible carbohydrates that are produced using chemical, enzymatic, or aqueous processes.

Inner pea fiber, also known as cotyledon pea fiber, is an isolated or synthetic fiber. As such, it requires approval by the FDA in order for its fiber content to be included on the nutrition facts label. To gain approval, manufacturers need to submit a Citizen Petition that provides scientific evidence of a benefit to human health (FDA, November 9, 2016). If the Citizen Petition meets the required evidential standard and FDA approval is granted, the fiber may then be included in the ‘total fiber’ on the nutrition facts label.

Large companies (more than $10 million in annual food sales) have until July 26, 2018 to comply with the new nutrition and supplement labeling regulations; small companies (less than $10 million in annual food sales) have until July 26, 2019 (FDA, May 2016).
One tablespoon of BEST Pea Hull Fiber 200 weighs 9 grams (TDF 90%) and has 8.1 grams of dietary fiber.

One teaspoon of BEST Pea Hull Fiber 200 weighs 3 grams (TDF 90%) and has 2.7 grams of dietary fiber.

Pea hull fiber, sometimes referred to as ‘outer’ pea fiber, is dry-milled from the seed coats or hulls of dried peas without the use of enzymes or buffers. It is significantly different, in terms of both chemical composition and functionality, from cotyledon pea fiber or ‘inner’ pea fiber. The latter is a by-product of aqueous or wet fractionation, which is used to produce protein and starch fractions (Meuser, 2001).

Ground pea hulls, with a total dietary fiber content of 85% or more, may be labeled as pea hull fiber. Pea hull fiber has a 75:25 balance of ‘insoluble’ to ‘soluble’ fiber which is close to the ratio that supports heart health (Moreno Franco et al, 2014). It contains numerous micronutrients including calcium, iron, magnesium, potassium, vitamins B1, B2, B3, B6, and folic acid.

This clean-label, non-GMO dietary fiber is gluten, lactose, and cholesterol free, and is not a labeled allergen in the US or Canada. It is available in both conventional (natural) and certified-organic (COS) forms.

Pea hull fiber is an ‘intrinsic and intact’ dietary fiber according to the new FDA Nutrition and Supplement Facts Label Regulations. It is permitted for use in processed meat products by the USDA FSIS, and is approved by Health Canada (2013) as a novel fiber for inclusion in ‘non-standardized’ foods (those for which the Canadian regulations do not provide specific compositional standards).

BEST Pea Hull Fibers are a consumer-friendly ingredient available in various mesh sizes, tailored to specific applications and easily integrated into traditional formulations. They are light in color, with a neutral flavor and aroma profile. Depending on the particle size, they have a relatively smooth ‘mouthfeel’. BEST Pea Hull Fibers have a high water absorption capacity. They are ‘ready to eat’, with low water activity and a long shelf life.

A study by the Manitoba Food Development Centre compared the antioxidant content of commercial pea hull fiber and cellulose (Caspar and Meseyton, 2013). Only dry-milled Best Cooking Pulses BEST Pea Hull Fiber 125 retained its antioxidant properties after milling, and continued to show antioxidant activity in pan bread that was stored for seven days.

WHY FORMULATORS ARE CHOOSING PEA HULL FIBER

• The moisture and oil binding properties of pea hull fiber improve baking yields and shelf-life.
• Adding pea hull fiber to gluten-free formulations boosts the fiber and micronutrient content, and provides better structure and mouth-feel.
• Pea hull fiber increases the dietary fiber content of nutraceuticals, bars, and beverages, with minimal effect on taste and mouth-feel.
• Pea hull fiber can be used in batters and breadings and processed meat products, to replace gums, corn starch, and soy protein isolate.
• Pea hull fiber acts as a nucleation agent to improve starch expansion control in extruded snacks (Hood-Neifer, 2013).
• Pea hull fiber can also be used as a label-friendly spice carrier.
According to the New Nutrition Business report, 10 Key Trends in Health and Nutrition for 2017, digestive wellness is the number-one issue. Dietary fiber, including pea hull fiber, has positive effects on microbiota and health.

Pea hull fiber provides a concentrated source of dietary fiber that can be successfully incorporated into a variety of food products. Several of these products have been evaluated for their effects on gastrointestinal function and wellness. Studies have shown not only improved laxation in people of various ages and health conditions, but also positive effects on microbiota and health.

- In children with constipation, stool frequency was increased when diets were supplemented with snacks containing pea hull fiber and beverages containing soluble fiber, providing an additional 6 grams of fiber per day (Flogan and Dahl, 2010).
- For older adults residing in long-term care, the addition of pea hull fiber to a variety of foods provided 4 grams of fiber per day. This resulted in an increase in monthly bowel movements, in particular for those residents with the lowest stool frequency (Dahl et al, 2003).
- In adults with chronic kidney disease, commercial foods with added fiber, including pea hull fiber, led to a significant increase in stool frequency (Salmean et al, 2013). In a subsequent study involving a similar patient population, a daily muffin containing 10 grams of pea hull fiber resulted in a significant increase in stool frequency (Salmean et al, 2015). The added pea hulls in combination with supplemental soluble fiber also lowered the level of toxins produced by bacteria in the colon, suggesting that pea hulls may favorably alter the gut microbiota.
- In a pilot study of young men consuming a high-protein diet, consuming 20 grams per day of pea hull fiber increased the prevalence of bacteria thought to be health-enhancing, specifically *F. prausnitzii* and other butyrate-producing bacteria.

In a study involving hypercholesterolemic and overweight adults, participants were given one-half cup of whole yellow pea flour or 12 grams of pea hull fiber per day. This resulted in significant reductions in fasting insulin and insulin resistance, as well as reduced adiposity in women (Marinangeli and Jones, 2011).

In overweight and obese adults, consuming 15 grams per day of pea hull fiber in the diet led to metabolic benefits, and thus may help in obesity management (Lambert et al. 2016).

### Summary

**BEST Pea Hull Fibers advantages:**

- High in total dietary fiber (90%) and naturally occurring micronutrients.
- Clean-label, non-GMO, gluten, lactose and cholesterol free, and not a labeled allergen.
- Excellent functionality in bakery, nutraceuticals, bars, beverages, crackers, batters and breading, snacks, and spices.
- Inherently sustainable, dry milled, ‘ready to eat’, and available conventional (natural) and certified-organic (COS).
- Regulatory approvals including FDA, US FSIS and Health Canada.
- Enhances gastrointestinal wellness.
- Reduces fasting insulin and insulin resistance, and aids in weight management.
- Economically priced.
- Suitable for gluten-free, dairy-free, lactose-free, raw, vegetarian and vegan diets.

15 grams of BEST Pea Hull Fiber per day led to metabolic benefits and thus may help in obesity management.

12 grams of BEST Pea Hull Fiber resulted in significant reductions in fasting insulin and insulin resistance.
REFERENCES


PARTNER WITH BEST COOKING PULSES TO CREATE DELICIOUS, NUTRIOUS, FUNCTIONAL FOODS, BEVERAGES, AND NUTRACEUTICALS

Best Cooking Pulses is a Canadian, family-owned agri-foods company that has been active in the international pulse trade since 1936. BEST pulse ingredients, sustainably milled on the Canadian prairies from primarily North American raw materials, includes a range of whole pea (yellow and green), bean (black, pinto, and navy), chickpea, lentil (green and brown), split pea and decorticated lentil (yellow and red) flours and grits, pea hull fibers, pulse inclusions, and whole peas, and whole pulses (peas, beans, chickpeas, and lentils).

All ingredients are non-GMO, conventional, natural, or certified organic (COS), and gluten tested. Best Cooking Pulses is BRC GFSI (AA), Canadian Grain Commission HACCP, and Kosher Check certified, Halal approved, non-GMO Project Verified compliant and SEDEX registered.

‘Pulse ingredients for healthy diets and a sustainable world.’

FOR MORE INFORMATION OR SAMPLES OF SPECIALTY MILLED BEST PULSE FLOURS, PEA HULL FIBERS, PULSE INCLUSIONS, AND WHOLE, SPLIT, OR DECORTICATED PULSES, CONTACT BEST COOKING PULSES AT 204.857.4451 (EXT 4) OR EMAIL SALES@BESTCOOKINGPULSES.COM.