USA Dry Pea & Lentil Council

# Baking Guide:
## Enhance the Nutritional Profile of Baked Goods with Pulses as Ingredients

# Peas, Lentils, Chickpeas...

*Pulses: edible dry seeds from pulse plants ~ Pulsemeal: roasted yellow pea flour*

**Nutritionally powerful.** Dry peas are among the most powerful of pulses. Their nutritional importance dates back almost 10,000 years BC when the protein and energy in these legume seeds were essential to developing civilizations. Even in these modern times the high quality protein, natural dietary fiber and beneficial starch in dry peas is difficult to match. Today, pea derivatives such as roasted pea flour (peasemeal), pea flour protein concentrates, pea fiber and starch isolates have emerged as functional food ingredients that deliver fresh marketing appeal. In fact, pulses are actually listed twice (in both the protein and vegetable categories) in USDA's Food Guide Pyramid.

*Comprised of 25%-27% dietary fiber—both soluble and insoluble—as well as resistant starch and high quality protein, pea flour is well suited for a wide range of healthy food and baking applications. With rates of obesity, diabetes and heart disease now routinely described as "epidemic" in the U.S. food products that incorporate pulses are increasingly appropriate and more marketable than ever.*

These unhealthy weight-related trends have prompted a surge in consumer demand as well as regulatory pressure for food staples that combine new nutritional relevance with familiar taste and texture. Pulses and their derivatives can help specialty and commercial bakers and pasta processors grab a piece of a functional food market expected to grow from $25 billion to almost $40 billion by 2011.

**Practical and naturally wholesome.** Within the last two years, 65% of consumers report a greater interest in healthy eating, according to market research from Tate and Lyle. The nutritional components in pulses such as pea flour can contribute to food product formulations that address these growing concerns about digestive and cardiovascular health as well as weight control and diabetes.

**Fiber with fringe benefits.** Fiber leads the consumer wish list. That's understandable; USDA reports that only 1 in 5 Americans get the recommended daily amount of fiber, with most of us consuming less than half recommended levels. The good news is that nearly 50% of today's consumers believe that fiber can actually taste good and boasts benefits beyond regularity. Indeed, survey results from the 2008 International Food Information Council, found that 77% of consumers are proactively trying to consume additional fiber. With more than 10 grams of natural dietary fiber per ¼ cup, pea flour in your formulation makes that task easy. The scientific jury is still debating the risk/benefit ratio of manufactured fiber sources. But fortifying with natural fiber from whole foods is no fad. Both the American Heart Association and the American Dietetic Association continue to emphasize the vital role that natural sources of dietary fiber play in maintaining good health.


**Good 'carbs' are slow 'carbs'.** Closely behind the clamor for fiber, listen for the buzz about the benefits of low "GI" foods. Pulses such as dry peas have a low glycemic index (GI), meaning a complex, slowly-digesting starch or carbohydrate portion that prevents sharp spikes in blood sugar levels. These blood sugar spikes not only are problematic for diabetics, but can lead to obesity and may present an increased risk for atherosclerosis in the non-diabetic population.

A staggering 23.6 million people—and more than 1 in 10 Americans over the age of 20—now have diabetes. This has prompted the American Diabetes Association (ADA) to state that "the intake of low glycemic index foods that are rich in fiber and other vital nutrients [such as pulses] should be encouraged both for the general population as well as those with diabetes." Beyond diabetes prevention, high glycemic index diets may also be associated with elevated triglycerides, another heart disease risk factor. Recent scientific evidence found that following a low GI diet over many years significantly lowered coronary heart disease risk.

**Pea is for protein.** With twice the protein of cereal grains, dry peas deliver an astounding 8 grams of high quality, low-fat, all-vegetable protein per ¼ cup. Rich in lysine, dry peas and pea flour have an amino acid balance

that compliments cereal grain proteins. It's precisely because of the quantity and quality of protein that this pulse is a venerable staple in hunger relief programs world-wide. This also makes pea flour and pea protein isolates and concentrates especially well-suited for protein-enriched baking and snack food applications demanded today.

Peas are a natural source of both Folate and Zinc. Providing about 125 mcg of Folate, just a cup of this pulse provides 37% of the RDA for Folate. Because of its important role in preventing birth defects, Folate enrichment is now a requirement for many U.S. baked products, including bread. And now, new research shows that Folate intake may reduce asthma and allergy suffering. To tap into the growing functional food market, today's food designers are also taking a closer look at Zinc-enriched products. The scientific evidence continues to underscore Zinc's important role in disease resistance and immunity. Pulses such as dry pea flour provide a 'natural' option for both Folate and Zinc enrichment.

**Dry Pea Flour Analysis**
**Value Per 100 Grams**

| Nutrients | Dry Pea | % Daily Value |
|---|---|---|
| Calories (kcal) | 365.0 | |
| Calories from Fat (kcal) | 20.0 | |
| Fat (g) | 2.2 | 3 |
| Saturated Fat (g) | 0.0 | |
| Trans Fatty Acid (g) | 0.0 | |
| Cholesterol (mg) | 0.0 | |
| Sodium (mg) | 15.0 | 1 |
| Carbohydrates (g) | 65.0 | 22 |
| Dietary Fiber (g) | 25.5 | 102 |
| Total Sugars (g) | 8.0 | |
| Protein (g) | 23.5 | 47 |
| Calcium (mg) | 55.0 | 6 |
| Iron (mg) | 4.4 | 25 |
| Potassium (mg) | 981.0 | 28 |
| Zinc (mg) | 3.0 | 20 |
| Vitamin A- IU (IU) | 149.0 | 3 |
| Vitamin C (mg) | 1.8 | 3 |
| Thiamin (mg) | 0.7 | 48 |
| Riboflavin (mg) | 0.2 | 13 |
| Niacin (mg) | 2.9 | 14 |
| Vitamin B-6 (mg) | 0.2 | 9 |
| Folate, total (mcg) | 274.0 | 69 |

Compiled from the data provided by USDA database and ESHA Genesis SQL software

| | ml | Grams | Ounces | Calories |
|---|---|---|---|---|
| 1 cup pea flour | 235 | 139 | 5 | 507 |
| 1 Tbls pea flour | 14 | 8 | 0 | 30 |

Results may vary by moisture, temperature and particle size of pea flour.

**Fault-free and "green."** Pea flour and its derivatives let food processors tap into growing consumer awareness about what constitutes a "healthy" product. This ingredient is tailor made for low-fat or fat-free formulas that are also GMO-free, non-allergen, gluten-free and cholesterol free. And, few other ingredients can claim to be as environmentally healthy. Pulse plants such as peas use less water and require no chemical fertilizer. In fact, they actually replenish natural soil nitrogen as they grow, improving the soil in the process. This low energy use is why pulses such as peas are called a "magical crop," as healthy to grow as they are to eat and perfect for products with a "green" story to tell.

**The functional, practical "pulse."** These are challenging times for bakers and snack makers. The daily barrage of headlines about obesity, heart disease and diabetes has Americans hungry to feel good about what they eat. Yet they still demand great taste and convenience. Now you can satisfy this new appetite for the delicious and nutritious by harnessing the power of pulses. Indeed, food scientists are discovering that these natural legumes seeds are also highly functional ingredients. Roasted pea flour is a prime example. Made from milled yellow peas, pea flour and its components let you create healthier products with traditional appeal. Loaded with fiber and high quality protein, roasted dry pea flour is suitable for a wide range of food product applications. It's mild, toasty flavor benefits a wide range of bakery goods. Non-allergen and gluten-free, with a low-glycemic index, it's also tailor-made for specialty bakery products.

**"Pea"rfect" fiber and protein solution.** Adding roasted pea flour to your ingredient mix is an instant way to enrich the fiber and protein content of snack bars, pasta, breads and other baked goods without altering appearance, taste or texture. And it's economical, especially when compared with fiber-fortifying gums or soy protein products. Light golden in color, yellow pea flour comes roasted and/or steam-treated depending on the functional attributes desired. This pre-cooking process gives pea flour superb stability with longer shelf life and flavor.

Yellow pea flour contains 25-27% all-natural dietary fiber—both soluble and insoluble. Although some products will accept 30% or more without formula changes, adding just 7% to your recipe can boost fiber by 1.4 grams. In fact, every 10 grams or ¼ cup of pea flour hikes both protein and dietary fiber by a hefty 2.5 grams. That same ¼ cup also delivers 8 grams of natural, high quality all-vegetable protein. Rich in lysine, with twice the protein (22.8%), pea flour has an amino acid profile that complements cereal grains.

**A Folate fortress.** When added to your baked good formulas, pea flour can significantly reduce the need for additional Folate fortification. Typical of all legumes, pea flour is a natural and substantial source of this crucial B vitamin as well as Zinc. And, if it's a specific attribute you're after, concentrated fractions of pea fiber, protein and starch are also commercially available.

**Not your typical low-fat flavor enhancer.** Besides enriching fiber and protein, precooked pea flour is an excellent way to improve flavor attributes in a variety of baked goods. Low in fat (2.5%), and highly unsaturated at that, pea flour has no cholesterol, yet gives low fat products structure and vital nutritional value. High in slowly digestible starch and resistant starch, both contribute to pea flour's low glycemic index making it an anti-obesity weapon and valuable food ingredient for diabetics and those at risk for diabetes and heart disease.

**Stable, safe and pure.** With stability comparable to wheat flour, precooked pea flour is microbially safe with low aerobic plate counts (300-600 CFU/g). U.S.-grown peas make excellent roasted pea flour as they have low levels of foreign matter, are dried naturally in the sun and harvested only when completely mature. Pea flour can be stored at ambient temperature for at least 3 months with no color loss, oxidation or off flavors. When kept cool (under 80 degrees F) and dry, a one year shelf life can be expected.

# YELLOW PEA FLOUR (Roasted)

Roasted yellow pea flour is well-suited for making more nutritious flatbreads, tortillas, pita breads, crackers, cookies, energy bars and extruded snacks. Increase dough yield, firmness and texture in the process.

*Isn't it time for a healthier burger bun? By adding 30% pea flour to a conventional commercial formula and then optimizing for moisture, U.S. food technologists created a delicious burger bun with 4 grams of fiber, 7 grams of protein and traditional taste, texture and appearance. (See www.northernpluse.com for recipe). Pea flour is a great way to enhance fiber and protein in all sorts of quick breads, rolls and buns.*

Gluten-free breads, cookies and high protein pastas are just some of the innovative pea flour food products making their way on to grocery shelves. Indeed, pea flour is a great way to add structure and enhance nutrition of products made with other gluten-free ingredients such as rice, tapioca or potato starches.

**Neutral color and flavor.** Roasted pea flour is an excellent flavor carrier and flavor improver. Breakfast bars containing up to 30% pea flour deliver great taste in a nutritional template of high fiber, vegetable protein, oligosaccharides, isoflavones, zinc, selenium and resistant starch.

*Crisp, crunchy texture potential. Create tasty, high fiber crackers with double the protein and half the fat.*

Yellow pea flour is stabilized by roasting and/or steam precooking. Either process partially gelatinizes starch, denatures protein and inactivates enzymes to increase shelf life. Because of its high absorption properties, additional moisture is warranted in some formulations. Expect minimal non-enzymatic browning and oil absorption when frying. (See recipes for a delectable, fiber-enriched doughnut and other great products). Dry or wet milling processes produce different purities in pea flour fractions, each with applications suitable to specific food matrix functions.

# PEA FIBER

Pea fiber fractions offer bakers a natural, more economical and nutritious alternative to gums. While enhancing dough yield, pea fiber fortification can also modify texture, create a full- bodied mouth feel, improve uniformity and consistency and reduce breakage in bars and cookies. Traditionally derived from the hull portion the seed, pea fiber is 85% soluble and 15% insoluble. Its high (20:1) water binding capacity, fat absorption and dough conditioning properties make pea fiber great for granola bars, pasta and many baked products. Particularly well-suited for low fat or color sensitive applications, pea fiber increases wheat flour's water absorption and is easily substituted for up to 25% of wheat flour in cakes, cookies and muffins to create products with up to 4 grams of fiber per serving.

*Better than Bran. Substitute 50% pea fiber to create a lemon blueberry muffin with half the calories, a third of the sugar, a fifth of the sodium and 2 grams more fiber than a comparable raisin bran muffin. Developed by Canadian food scientists, the lemon blueberry (pea fiber) muffin delivered 8 grams of fiber and still earned a taste panel thumb's up!*

Proprietary processes for producing insoluble pea fiber from the seed's interior are also available. The resulting white, 70% fiber powder has emulsifying and gelling properties that make it especially useful for enriching white bakery products without affecting color or flavor.

# PEA PROTEIN

**Fortify protein in bread, pastas and nutritional bars.** Pea protein concentrates and isolates are functional, bio-available and loaded with lysine. Pea protein concentrates and isolates are an economical, non-allergen and non-GMO alternative to soy flour. Protein isolates (85% P) and concentrates (55%-60%P) are highly soluble with excellent water-holding capacity.

**The Pea Flour TOP TEN**

- Fiber enrichment
- Protein enrichment
- Folate enrichment
- High Lysine
- Low fat
- Non-GMO
- Gluten-free
- Cholesterol free
- Non-Allergen
- Low Glycemic Index

**Give structure to gluten-free products.** Create satisfying but nutritious snacks because of their expansion and extrusion potential. Pea protein's promising potential as an egg replacer is currently being explored.

# PEA STARCH

**Improve crispness, loaf volume and appearance.** With more than 98% purity, pea starch isolates have excellent gel strength and a bland taste. Especially well suited for cookies and crackers as well as Asian-style noodles, they also contribute to increased volume and expansion in extruded products and puffed snacks. Pea starch makes an excellent low-glycemic ingredient.

**Hop on the fiber labeling bandwagon.** FDA's Nutrient Content Claims on dietary fiber allow a "Rich", "High" or "Excellent Source" of fiber claim when your product delivers 5 grams or more fiber per serving. Use a "Good" source of fiber claim for products with 3 grams to less than 5 grams of fiber per serving. Consult FDA guidelines for more specific information prior to making label claims.

To find the following exciting pea flour recipes, visit **www.northernpulse.com**

| | Dietary Fiber/ Serving | Protein/ Serving |
|---|---|---|
| Bagel | 3 g | 7 g |
| Brownie | 1 g | 2 g |
| Buttermilk pancake | 2 g | 4 g |
| Carrot muffin | 4 g | 4 g |
| Doughnut | 3 g | 5 g |
| Ginger cookie | 1 g | 2 g |
| Burger bun | 4 g | 7 g |
| Pan bread | 2 g | 4 g |
| Tortilla | 3 g | 7 g |
| Whole wheat bread | 4 g | 5 g |

## Pea Carrot Muffins

| Ingredient List | Amount (Baker's %) |
|---|---|
| All purpose wheat flour | 100.0 |
| Precooked yellow pea flour | 300.0 |
| Cooking oil | 285.0 |
| Sugar | 296.0 |
| Eggs | 228.0 |
| Vanilla | 5.2 |
| Carrot | 296.0 |
| Baking soda | 11.1 |
| Salt | 6.5 |
| Cinnamon | 2.9 |
| Pecans | 57.0 |
| Raisins | 57.0 |
| Pineapple | 57.0 |

**Processing:**

Mix all ingredients until well incorporated
Pour into muffin cup and top with chopped pecans
Bake for 22-23 minutes at 350°F

Serving size 1 muffin (62 g)


Nutrition Facts
Serving Size (62g)
Servings Per Container
Amount Per Serving
Calories 220 Calories from Fat 120
% Daily Value*
Total Fat 13g 20%
Saturated Fat 1.5g 8%
Trans Fat 0g
Cholesterol 30mg 10%
Sodium 230mg 10%
Total Carbohydrate 25g 8%
Dietary Fiber 4g 16%
Sugars 14g
Protein 4g
Vitamin A 40% • Vitamin C 2%
Calcium 2% • Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

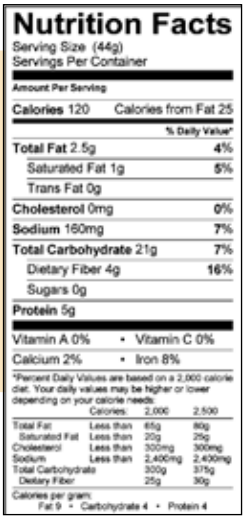
## Pea Hamburger Buns

| Ingredient List | Amount (Baker's %) |
|---|---|
| High gluten bread flour | 100.0 |
| Precooked yellow pea flour | 30.0 |
| Shortening | 6.0 |
| Salt | 1.5 |
| Instant yeast | 1.2 |
| Sugar | 1.5 |
| Dry milk | 1.0 |
| Emplexa | 0.5 |
| Water | 67.0 |

**Processing:**

Mix to optimum dough development for 6-7 minutes
Scale dough, round pieces
Proof for 60 minutes at 31°C and 75% RH
Bake for 18-19 minutes at 400°F
a American Ingredients. Contains sodium stearoyl lactylate.

Serving size 1 bun (74 g)


Nutrition Facts
Serving Size (44g)
Servings Per Container
Amount Per Serving
Calories 120 Calories from Fat 25
% Daily Value*
Total Fat 2.5g 4%
Saturated Fat 1g 5%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 160mg 7%
Total Carbohydrate 21g 7%
Dietary Fiber 4g 16%
Sugars 0g
Protein 5g
Vitamin A 0% • Vitamin C 0%
Calcium 2% • Iron 8%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Doughnuts

| Ingredient List | Amount (Baker's %) |
|---|---|
| All purpose wheat flour | 100.0 |
| Precooked yellow pea flour | 50.0 |
| Instant yeast | 3.5 |
| Shortening | 10.0 |
| Eggs | 25.0 |
| Whole milk | 86.0 |
| Sugar | 14.0 |
| Salt | 1.8 |
| Nutmeg | 0.5 |
| Water | 16.0 |

**Processing**

Heat milk and shortening; add yeast and let stand 7 minutes
Mix all ingredients 3-4 minutes
Let rise 30 minutes
Cut into doughnut shapes; let rise for an additional 30 minutes
Fry at 365°F for 30-45 seconds per side

Serving size 1 doughnut (46 g)


Nutrition Facts
Serving Size (46g)
Servings Per Container
Amount Per Serving
Calories 130 Calories from Fat 25
% Daily Value*
Total Fat 3g 5%
Saturated Fat 1g 5%
Trans Fat 0g
Cholesterol 20mg 7%
Sodium 125mg 5%
Total Carbohydrate 21g 7%
Dietary Fiber 3g 12%
Sugars 3g
Protein 5g
Vitamin A 0% • Vitamin C 4%
Calcium 2% • Iron 2%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Brownies

| Ingredient List | Amount |
|---|---|
| All purpose wheat flour | 100.0 |
| Precooked yellow pea flour | 55.0 |
| Butter | 70.4 |
| Sugar | 131.0 |
| Eggs | 124.2 |
| Vanilla | 2.9 |
| Baking powder | 1.5 |
| Chocolate syrup | 248.0 |
| **Frosting Ingredient List** | **Amount (Baker's %)** |
| Butter | 54.8 |
| Sugar | 155.3 |
| Whole milk | 49.7 |
| Chocolate chips | 49.7 |

**Processing:**

Cream together butter and sugar
Beat the eggs in 100g at a time
Add the dry ingredients; mix and stir in syrup
Pour into jelly-roll pan and bake 35 minutes at 350°F
Frost

Serving size 1 brownie (47 g)


Nutrition Facts
Serving Size (47g)
Servings Per Container
Amount Per Serving
Calories 150 Calories from Fat 35
% Daily Value*
Total Fat 4g 6%
Saturated Fat 2.5g 13%
Trans Fat 0g
Cholesterol 20mg 7%
Sodium 25mg 1%
Total Carbohydrate 29g 10%
Dietary Fiber 1g 4%
Sugars 22g
Protein 2g
Vitamin A 2% • Vitamin C 0%
Calcium 2% • Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Pan Bread

| Ingredient List | Amount (Baker's %) |
|---|---|
| High gluten bread flour | 100.0 |
| Precooked yellow pea flour | 30.0 |
| Shortening | 7.8 |
| Salt | 1.9 |
| Instant yeast | 1.4 |
| Sugar | 7.8 |
| Emplexa | 0.7 |
| Water | 81.1 |

**Processing:**

Mix to optimum dough development for 5-6 minutes
Scale dough, round and let rest 10 minutes
Mold the dough and proof for 80 minutes at 35°C and 85% RH
Bake for 22-24 minutes at 400°F
a American Ingredients. Contains sodium stearoyl lactylate.

Serving size 1 slice (44g)


Nutrition Facts
Serving Size (44g)
Servings Per Container
Amount Per Serving
Calories 120 Calories from Fat 20
% Daily Value*
Total Fat 2g 3%
Saturated Fat 1g 5%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 160mg 7%
Total Carbohydrate 22g 7%
Dietary Fiber 2g 8%
Sugars 2g
Protein 4g
Vitamin A 0% • Vitamin C 2%
Calcium 2% • Iron 2%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Ginger Cookies

| Ingredient List | Amount (Baker's %) |
|---|---|
| All purpose wheat flour | 100.0 |
| Precooked yellow pea flour | 42.0 |
| Shortening | 42.0 |
| Sugar | 88.2 |
| Eggs | 21.0 |
| Molasses | 28.5 |
| Baking soda | 4.0 |
| Vanilla | 1.9 |
| Salt | 1.3 |
| Cinnamon | 0.8 |
| Ginger | 0.3 |

**Processing**:

Cream together the shortening and sugar
Add the egg and molasses and mix until incorporated
Stir in remaining ingredients
Roll into balls, dip in sugar and bake for 12 minutes at 350°F

Serving size 1 cookie (33g)


Nutrition Facts
Serving Size (33g)
Servings Per Container
Amount Per Serving
Calories 140 Calories from Fat 45
% Daily Value*
Total Fat 5g 8%
Saturated Fat 2g 10%
Trans Fat 0g
Cholesterol 10mg 3%
Sodium 170mg 7%
Total Carbohydrate 22g 7%
Dietary Fiber 1g 4%
Sugars 11g
Protein 2g
Vitamin A 0% • Vitamin C 0%
Calcium 0% • Iron 2%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Bagel

| Ingredient List | Amount (Baker's %) |
|---|---|
| High gluten bread flour | 100.0 |
| Precooked yellow pea flour | 20.0 |
| Sugar | 7.8 |
| Salt | 1.9 |
| Instant yeast | 1.4 |
| Water | 60.9 |

**Processing:**

Mix to full development
Scale, round and shape dough pieces
Proof approximately 80 minutes
Boil 90 seconds each side and allow to dry slightly
Bake for 20 minutes at 375°F

Serving size 1 bagel (83 g)

**Nutrition Facts**
Serving Size (83g)
Servings Per Container
Amount Per Serving
Calories 220 Calories from Fat 5
% Daily Value*
Total Fat 1g 2%
Saturated Fat 0g 0%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 330mg 14%
Total Carbohydrate 45g 15%
Dietary Fiber 3g 12%
Sugars 4g
Protein 7g
Vitamin A 0% • Vitamin C 4%
Calcium 2% • Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Whole Wheat Hearth Bread

| Ingredient List | Amount (Baker's %) |
|---|---|
| Whole wheat flour | 100.0 |
| Precooked yellow pea flour | 5.0 |
| Shortening | 6.0 |
| Salt | 1.5 |
| Vital wheat gluten | 4.0 |
| Emplex* | 0.5 |
| Milled Flaxseed | 4.0 |
| Water | 72.0 |

**Processing:**

Mix to optimum dough development for 4-6 minutes
Scale dough, round pieces and let rest for 10 minutes
Bake for 22-24 minutes at 400°F

Serving size 1 slice (44 g)
* American Ingredients. Contains sodium stearoyl lactylate.

**Nutrition Facts**
Serving Size (74g)
Servings Per Container
Amount Per Serving
Calories 210 Calories from Fat 30
% Daily Value*
Total Fat 3g 5%
Saturated Fat 1g 5%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 230mg 10%
Total Carbohydrate 37g 12%
Dietary Fiber 4g 16%
Sugars 1g
Protein 7g
Vitamin A 0% • Vitamin C 2%
Calcium 2% • Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Buttermilk Pancakes

| Ingredient List | Amount (Baker's %) |
|---|---|
| All purpose wheat flour | 100.0 |
| Precooked yellow pea flour | 33.3 |
| Vegetable oil | 18.7 |
| Buttermilk | 122.6 |
| Whole milk | 93.3 |
| Eggs | 40.0 |
| Sugar | 19.2 |
| Salt | 1.6 |
| Baking powder | 3.5 |
| Baking soda | 3.1 |

**Processing:**

Mix ingredients until smooth; approximately 2 minutes
Bake on medium heat until browned on both sides

Serving size 1 pancake (56 g)

**Nutrition Facts**
Serving Size (56g)
Servings Per Container
Amount Per Serving
Calories 180 Calories from Fat 90
% Daily Value*
Total Fat 10g 15%
Saturated Fat 4.5g 23%
Trans Fat 0g
Cholesterol 40mg 13%
Sodium 290mg 12%
Total Carbohydrate 18g 6%
Dietary Fiber 2g 8%
Sugars 4g
Protein 4g
Vitamin A 4% • Vitamin C 0%
Calcium 6% • Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

## Pea Tortillas

| Ingredient List | Amount (Baker's %) |
|---|---|
| High gluten bread Flour | 100.0 |
| Precooked yellow pea flour | 20.0 |
| Shortening | 12.2 |
| Salt | 1.8 |
| Baking powder | 1.5 |
| Water | 57.0 |

**Processing:**

Mix ingredients for 6-7 minutes
Rest dough for 10 minutes
Cut, mold and bake for 1.2 seconds in tortilla maker
Bake sheeted tortilla for 2 minutes at 550°F

Serving size 1 tortilla (75 g)

**Nutrition Facts**
Serving Size (75g)
Servings Per Container
Amount Per Serving
Calories 230 Calories from Fat 50
% Daily Value*
Total Fat 6g 9%
Saturated Fat 2.5g 13%
Trans Fat 0g
Cholesterol 5mg 2%
Sodium 360mg 15%
Total Carbohydrate 37g 12%
Dietary Fiber 3g 12%
Sugars 1g
Protein 7g
Vitamin A 0% • Vitamin C 0%
Calcium 4% • Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:
Calories: 2,000 2,500
Total Fat Less than 65g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

# Yellow Pea Products

| Pea Flour | Attributes | Food Product Applications |
|---|---|---|
| •Flours and powders available<br>•Organic, kosher, halal available<br>•Roasted or steam-treated for stability | •Fiber and protein enrichment<br>•Neutral color<br>•Excellent flavor carrier<br>•Folate, Zinc enrichment | •Breads, pastas, breakfast bars<br>•Flat breads, pitas, rolls, doughnuts, buns, crackers<br>•Gluten-free bakery products<br>•Extruded products, meat products |
| **Pea Fiber** | **Attributes** | **Food Product Applications** |
| •Yellow pea fraction<br>•Outer hull and inner fiber products available<br>•Organic, kosher, halal available | •Fiber fortification<br>•Economical gum alternative<br>•Modify texture<br>•Improve uniformity<br>•Reduce breakage | •Nutrition bars<br>•White breads, bagels, muffins, cookies, cakes, tortillas<br>•Low fat applications<br>•Pasta, meat products<br>•Soups, vegetarian foods<br>•Ready-to-eat meals |
| **Pea Protein** | **Attributes** | **Food Product Applications** |
| •Yellow pea fraction<br>•Dry-milled concentrates<br>•Wet-milled isolates | •High-lysine<br>•Non-allergen, non-GMO<br>•Economical alternative to soy<br>•Soluble, excellent water holding capacity<br>•Enhanced structure, nutrition | •Breads, dressings<br>•Nutrition bars, snacks<br>•Pasta, soups, seafood, meats<br>•Gluten-free, vegetarian<br>•Baby food, meal replacement beverages |
| **Pea Starch** | **Attributes** | **Food Product Applications** |
| •Yellow pea fraction<br>•Dry or wet-milled products available<br>•Resistant and slowly digestible starch | •Improve crispness, volume, appearance<br>•Excellent gel strength<br>•Bland Taste | •Cookies, crackers<br>•Breakfast bars, snacks<br>•Extruded products<br>•Noodles |

# Lemony Chickpea Cake

*Makes two 8-inch round cakes or one 8-inch layer cake, approximately 10 servings*

*Who could guess that this cake is full of chick-peas? Tender, moist, and delightfully lemony, this cake is equally well suited for teatime, coffee break, or the end of an elegant meal.*

1 15-ounce can USA chickpeas, drained and rinsed, or about 2 cups boiled (cooking instructions on pg. 18)
4 tablespoons lemon juice
¼ cup vegetable oil
2 teaspoons grated lemon zest
2 egg yolks
2/3 cup all-purpose flour
1 cup sugar
2 teaspoons baking powder
½ teaspoon salt
2 egg whites
184 teaspoon cream of tartar
2 tablespoons freshly squeezed lemon juice
Powdered sugar

Preheat oven to 350°F. Grease and lightly flour two 8-inch round cake pans.

In a blender or food processor purée chickpeas with lemon juice, oil, and lemon zest. Add egg yolks and blend well. Turn mixture into a large bowl.

In a medium bowl, combine flour, 1/2 cup sugar, baking powder, and salt. Mix well. Add to puréed chickpea mixture and mix well.

In another medium bowl, beat egg whites and cream of tartar until foamy. Gradually add remaining 1/2 cup sugar in a slow, thin stream, beating until whites form peaks that are stiff but not dry.

Fold beaten egg whites into chickpea purée. Pour batter into the prepared pans and bake 30 to 35 minutes, or until a toothpick inserted into center of cake comes out clean. Cool 10 minutes on a rack, then turn cake out of pans and onto racks. Cool completely.

Dribble one tablespoon lemon juice over each round, and sprinkle tops with powdered sugar.

# Delectable Lentil Brownies

*Makes 20 brownies*

4 large eggs
2 cups sugar
1 cup vegetable oil
2 teaspoons vanilla
1 ½ cups flour
½ cup plus 2 tablespoons cocoa
1 teaspoon salt
1 cup chocolate chips
1 cup of cooked large lentils, cooked 40 minutes & drained (no pre-soaking)
1 cup small marshmallows

Beat the eggs and sugar. Add in the oil and vanilla.

Sift the dry ingredients and add to the sugar and egg mixture. Stir in the chocolate chips, cooked lentils, and marshmallows.

Bake in a greased 9-by-13-inch pan at 350° F for 35 minutes.

Delectable Lentil Brownies, per serving (1 brownie): Calories 272 kcal, Total Carbohydrates 35g, Protein 4g, Total Fat 13 g, Sugar 24g, Fiber 2g, Saturated Fat 2 g

Northern Pulse Growers Association
**www.northernpulse.com**

Photos page 1,2 & 5 courtesy of the Northern Pulse Growers Association.

# Chocolate Chip Cookies with Yellow Pea Flour

*Makes about 5 dozen cookies.*

1 ½ cups all-purpose flour
¾ cup yellow pea flour
1 tsp salt
1 tsp baking soda
1 cup butter, softened
¾ cup granulated sugar
¾ cup packed brown sugar
2 large eggs
1 tsp vanilla extract
2 tbsp Karo syrup
1 ¾ cups chocolate chips
½ cup chopped nuts

Preheat oven to 350° F.

Combine flours, salt and baking soda in a small bowl. Beat butter, sugars and vanilla extract in a large mixing bowl until creamy. Add eggs and Karo syrup, beating well. Gradually beat in flour mixture. Stir in chocolate chips and nuts.

Drop by rounded tablespoons onto ungreased baking sheets. Bake 9 – 11 minutes or until brown.

USA Dry Pea & Lentil Council
2780 W Pullman Road
Moscow ID 83843
208-882-3023
**www-pea-lentil.com**