FN1508

PULSES: THE PERFECT FOOD

healthy to eat • healthy to grow.

PEAS • LENTILS • CHICKPEAS

Pulses, which include chickpeas/garbanzo beans, dry peas and lentils, are increasingly being recognized for their role in promoting good health. Researchers have reported that regular consumption of pulses may reduce the risk of heart disease, diabetes and certain types of cancer. Pulses are a versatile, easy-to-prepare ingredient that can be used in entrees, salads, breads and desserts.

Developed for the Northern Pulse Growers Association by Julie Garden-Robinson, Ph.D., L.R.D., Food and Nutrition Specialist, North Dakota State University Extension Service

INCLUDE MORE

ROLE OF PULSES IN A HEALTHFUL DIET

Pulses are a type of legume (seeds that grow within pods). Pulses include chickpeas (also known as garbanzo beans), lentils and dry peas. Pulses provide protein, dietary fiber, and many vitamins and minerals. They also contain "phytochemicals" (plant chemicals), which may reduce the risk of certain types of cancer and other diseases. As a result of their nutritional properties, the 2005 U.S. Dietary Guidelines for Americans recommends more frequent consumption of lentils, dry peas and beans.

The Dietary Guidelines are depicted on the *www.mypyramid.gov* website, where you can print a daily food guide. The amount of food you need from each food group varies depending on your age, gender and physical activity. Pulses can count either toward the "Vegetable Group" recommendation or toward the "Meat & Beans Group" recommendation. Nutrition experts recommend 2.5 to 3.5 cups of beans, peas or lentils per week.

MyPyramid.gov
STEPS TO A HEALTHIER YOU

The recommendations for the Vegetable Group are in cups. On average, an adult needs about 2.5 to 3 cups of vegetables per day.

- 1 cup of whole or mashed cooked peas or lentils = 1 cup of vegetables.

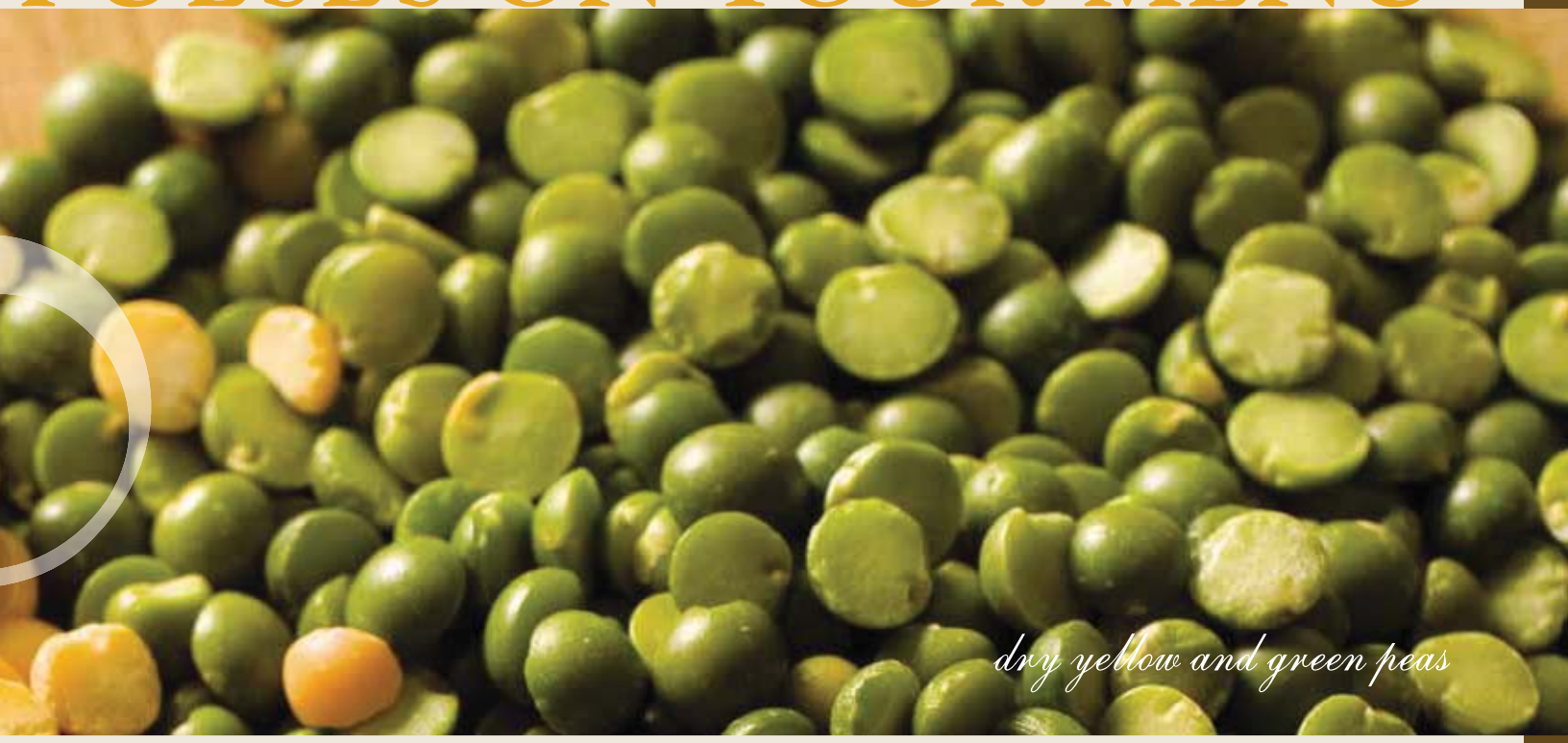
The recommendations for the Meat & Beans Group are in ounce equivalents. On average, an adult needs 5 to 6 ounce equivalents from the Meat & Beans Group daily.

- ¼ cup of cooked chickpeas, lentils or split peas = 1 ounce equivalent
- 1 cup of split pea soup = 2 ounce equivalents
- 1 cup of lentil soup = 2 ounce equivalents

NUTRIENT-RICH PULSES

As shown in Table 1 (next page), pulses provide protein, complex carbohydrates, and several vitamins and minerals. Like other plant-based foods, they contain no cholesterol and little fat or sodium. Pulses also provide iron, magnesium, phosphorus, zinc and other minerals, which play a variety of roles in maintaining good health.

PULSES ON YOUR MENU



dry yellow and green peas

TABLE 1

NUTRITIONAL ANALYSIS* OF SELECTED PULSES COMPARED WITH A REFERENCE DIET

Nutrient (unit)	Reference Diet (used on food labels)	Chickpeas/ Garbanzo Beans (per cup**, cooked, without added salt)	Lentils (per cup**, cooked, without added salt)	Split Peas (per cup**, cooked, without added salt)
Calories *(kcal)*	2,000	269	230	231
Total Fat *(g)*	Less than 65	4.3	0.8	0.8
Saturated Fat *(g)*	Less than 20	0.4	0.1	0.1
Trans Fat *(g)*	No value set; minimize in diet	0	0	0
Cholesterol *(mg)*	Less than 300	0	0	0
Sodium *(mg)*	Less than 2,400	11	4	4
Total Carbohydrate *(g)*	300	45	39.9	41.3
Fiber *(g)*	25	12.5	15.6	16.3
Protein *(g)*	50	14.5	17.9	16.4
Vitamin A *(IU)*	5,000	44	16	14
Vitamin C *(mg)*	60	2.1	3.0	0.8
Calcium *(mg)*	1,000	80	38	27
Iron *(mg)*	18	4.7	6.6	2.5

**Source: U.S. Department of Agriculture, Agricultural Research Service. National Nutrient Database for Standard Reference, available at www.nal.usda.gov/fnic/foodcomp*

***1 cup of cooked pulses counts as 4 ounce equivalents from the Meat & Beans Group or 1 cup of vegetables from the Vegetable Group of MyPyramid.*

Nutrition experts recommend that adults consume at least 25 grams of fiber per day. Foods high in insoluble fiber, such as pulses, help prevent constipation. Pulses also contain soluble fiber, a type of fiber that may help reduce blood cholesterol levels. Pulses are particularly high in the B vitamin folate. The U.S. Public Health Service recommends that women of childbearing age consume at least 400 micrograms (mcg) of folic acid/folate daily to help prevent birth defects.

USE OF PULSES IN SPECIAL DIETS

As a result of their nutrient content and other properties, pulses can play a role in several special diets:

- **Gluten-free diet:** If a person with celiac disease consumes gluten (a protein found in wheat and some other cereal grains), an immune reaction is triggered in the small intestine, which can cause damage and poor absorption of nutrients. Pulses contain no gluten; therefore, people with celiac disease can use chickpeas, lentils or peas as an ingredient in recipes.
- **Diabetic diet:** For people with diabetes, consuming lentils, peas and beans may help with blood glucose management. Compared with some other carbohydrate sources, pulses have a lower glycemic index. Some studies have shown that consuming pulses may result in more stable blood glucose levels after meals.
- **Vegetarian diet:** Pulses are good sources of protein, vitamins and minerals (especially iron and zinc), which

makes them an excellent food choice for vegetarians. They contain eight essential amino acids. Consuming lentils with rice provides the full complement of amino acids needed for growth.

- **Weight management diet:** Although more studies are needed, consuming pulses may help with weight management. For people trying to lose weight, pulses are high in fiber and protein, low in fat and moderate in calories. One cup of cooked lentils or dry peas contains about half of the daily fiber recommendation for adults. Foods higher in fiber content usually help people feel "full" or satiated at mealtime.

Nutrition note: When consuming extra fiber, be sure to drink plenty of fluids.

BUYING AND PREPARING PULSES

Pulses are available in grocery stores in different forms, including canned, in plastic bags and/or in bulk. You can find chickpeas (garbanzo beans) with other ready-to-use canned beans. Lentils and split/whole peas are available dry and usually are near the rice and dry beans.

Pulses should be cooked before eating. Unlike dry beans, lentils and split peas do not require soaking prior to cooking. Use unsalted water because adding salt may cause the lentils to toughen during cooking. Add acidic ingredients (such as tomatoes) later in the cooking process because they may slow cooking.

PULSES ON THE MENU

Pulses have been used widely in cuisine throughout the world, particularly in India, Pakistan, the Mediterranean region and the Middle East. Pulses add variety to menus and a chance for home cooks to expand their menu options. Not only are pulses easy to prepare, but they also can serve as a meat extender on menus. Add some variety and nutrition to your diet with these tips:

- Make curry with lentils or chickpeas and serve over rice or white fish.
- Add lentils to chili, taco meat, meatloaf, soup or spaghetti sauce.
- Prepare minestrone and other soups with lentils or chickpeas.
- Make a pot of split pea soup with or without added meat.

- Serve split pea salsa as a side dish with grilled meat.
- Blend chickpeas with garlic and tahini to make "hummus." Serve with vegetables (carrots, peppers) or whole-grain crackers.
- Add chickpeas or lentils to a mixed green salad.

STORING PULSES

Store dry (uncooked) pulses in a sealed container in a cool, dry place. Pulses will keep indefinitely. Although the color may fade slightly during long storage, the flavor will not change.

Food safety experts recommend that cooked pulses and cooked dishes containing pulses should spend no more than two hours at room temperature because of their protein and moisture content. Refrigerate leftovers at 40 degrees Fahrenheit or lower and use leftovers within three days. Reheat leftovers to an internal temperature of 165 degrees Fahrenheit.

TOP 10 REASONS TO USE PULSES

- Excellent source of fiber.
- Good source of protein.
- Low-fat.
- Low-sodium.
- Good source of iron.
- Excellent source of folate.
- Good source of potassium.
- Low glycemic index.
- Gluten-free.
- Cholesterol-free.

PREPARING CHICKPEAS/GARBANZO BEANS

- Remove any small stones, then place in a strainer and rinse with water.
- Chickpeas require soaking prior to cooking. The following methods may be used to soak chickpeas:
  - Traditional slow soak: Cover 1 pound of dry chickpeas with 10 cups of water and refrigerate 6 to 8 hours or overnight.
  - Hot soak: Bring 10 cups of water to a boil in a sauce pot, add 1 pound dry chickpeas and return to boil. Allow to stand at room temperature for 2 to 3 hours.
  - Quick soak: Bring 10 cups of water to a boil, then add 1 pound of dry chickpeas. Boil 2 to 3 minutes. Allow to stand at room temperature for 1 hour
- To cook: Drain and rinse chickpeas, then use 2 cups of unsalted water for every cup of chickpeas. Simmer for 1.5 to 2 hours, then use in your favorite recipes.

Yield: 1 cup chickpeas + 2 cups water = About 2 cups of cooked chickpeas

PREPARING LENTILS

- Remove any small stones, then place in strainer and rinse with water. You do not need to soak lentils.
- For every cup of lentils, add 2.5 cups of unsalted water. Heat water to boiling, then simmer lentils for 15 to 20 minutes.

Yield: 1 cup lentils + 2.5 cups water = About 2.5 cups of cooked lentils

PREPARING DRY PEAS (SPLIT OR WHOLE)

- Split peas:
  - Split peas do not require an overnight soaking. Use 2 cups of water for each cup of dry peas. Heat water to boiling, then simmer split peas for about 30 minutes to desired tenderness.
- Whole peas:
  - Soak whole peas in water overnight or use one of the methods under "Preparing Chickpeas."
  - To cook: After soaking, cook whole peas for 35 to 40 minutes to desired tenderness.

Yield: 1 cup split peas + 2 cups water = About 2 cups of cooked split peas

REFERENCES

- Campos-Vega, R., Loarca-Pina, G., & Oomah, B. (2010). *Minor components of pulses and their potential impact on human health.* Food Research International, 43, 461-482.
- Goni, I., & Valentin-Gamazo, C. (2003). *Chickpea flour ingredient slows glycemic response to pasta in healthy volunteers.* Food Chemistry, 8, 511-515.
- Khan, I. Tabassum, F., & Khan, A. (2008). *Glycemic indices and glycemic loads of various types of pulses.* Pakistan Journal of Nutrition, 7(1), 104-108.
- Mitchell, D., Lawrence, F., Hartman, T., & Curran, J. (2009). *Consumption of dry beans, peas, and lentils could improve diet quality in the U.S. population.* Journal of the American Dietetic Association, 109(5), 909-913.
- Rochfort, S. & Panozzo, J. (2007). *Phytochemicals for health, the role of pulses.* Journal of Agricultural and Food Chemistry, 55(20), 7981-7994.
- Roy, F., Boye, J.. & Simpson, B. (2010). *Bioactive proteins and peptides in pulse crops: Pea, chickpea and lentil.* Food Research International, 43, 432-442.
- Thavarajah, P., Thavarajah, D., & Vandenberg, A. (2009). *Low phytic acid lentils (Lens culinaris L.): A potential solution for increased micronutrient bioavailability,* Journal of Agricultural and Food Chemistry, 7, 9044-9049.
- Tosh, S.,& Yada, S. (2010). *Dietary fibres in pulse seeds and fractions: Characterization, functional attributes, and applications.* Food Research International, 43, 450-460.

The author acknowledges the work of program assistants Stacy Halvorson and Kendra Otto in testing recipes. Recipes were analyzed using Food Processor SQL software.

Northern Pulse Growers Association

Bismarck, North Dakota
www.northernpulse.com

NDSU Extension Service
North Dakota State University

NDSU is an equal opportunity employer

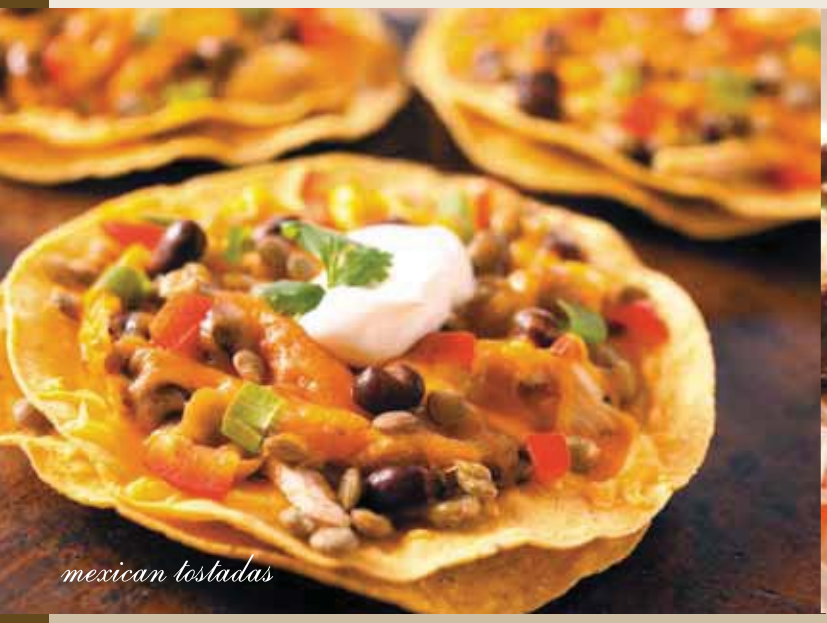
mexican tostadas

1/3 c. lentils
1 1/3 c. water
2 Tbsp. vegetable oil
1 lb. chicken breasts boneless, skinless
2/3 c. finely chopped green onion
2 cloves garlic minced
1 (16-oz.) jar medium salsa (or your choice)
1 c. black beans, drained and rinsed
1 1/2 c. bell pepper, chopped
1 tsp. chili powder
1 tsp. ground cumin
1/2 tsp. salt
8 tostadas

Optional toppings: Shredded cheese, sour cream, guacamole and black olives

In a medium saucepan, bring lentils and water to boil, reduce heat, cover and simmer until lentils are tender. In a frying pan, cook chicken until it reaches an internal temperature of 165 degrees F. Heat oil in a separate pan and sauté onion and garlic in oil, stirring constantly. Reduce heat and add salsa, lentils, black beans and seasonings. Shred or cube chicken and add to the salsa mixture. Continue cooking until heated through. Portion onto tostadas and top with peppers and your other favorite toppings.

Makes eight servings. Per serving (one tostada, without optional toppings): 220 calories, 8 g fat, 1.4 g saturated fat, 15 g protein, 21 g carbohydrate, 3 g fiber, 820 mg sodium, 1.8 mg iron and 19.6 mcg folate.


mexican tostadas

steak and chickpea stir-fry

steak and chickpea stir-fry

8 oz. boneless sirloin steak, trimmed and cut into strips
1 (15-oz.) can chickpeas, drained and rinsed
7 Tbsp. water
1 Tbsp. cornstarch
1/2 red bell pepper, cut into strips
1/2 green bell pepper, cut into strips
1 Tbsp. garlic, minced
1/2 tsp. ground ginger
1/4 tsp. red pepper flakes
1/4 c. teriyaki basting sauce
2 Tbsp. soy sauce

Heat a large skillet over medium heat. Coat pan with nonstick cooking spray; add steak strips. Fry for 5 minutes or until steak is fully cooked. Transfer to plate. Mix cornstarch and 3 tablespoons water; add chickpeas, remaining water, peppers, garlic, ginger, red pepper flakes, soy sauce and teriyaki sauce to pan and cook for 5 minutes. Return beef to vegetable mixture and toss to coat. Serve over rice noodles or brown rice.

Makes four servings. Per serving: 230 calories, 2.5 g fat, 0.6 g saturated fat, 20 g protein, 29 g carbohydrate, 2 g fiber, 520 mg sodium, 3.2 mg iron and 14.3 mcg folate.

split pea salsa

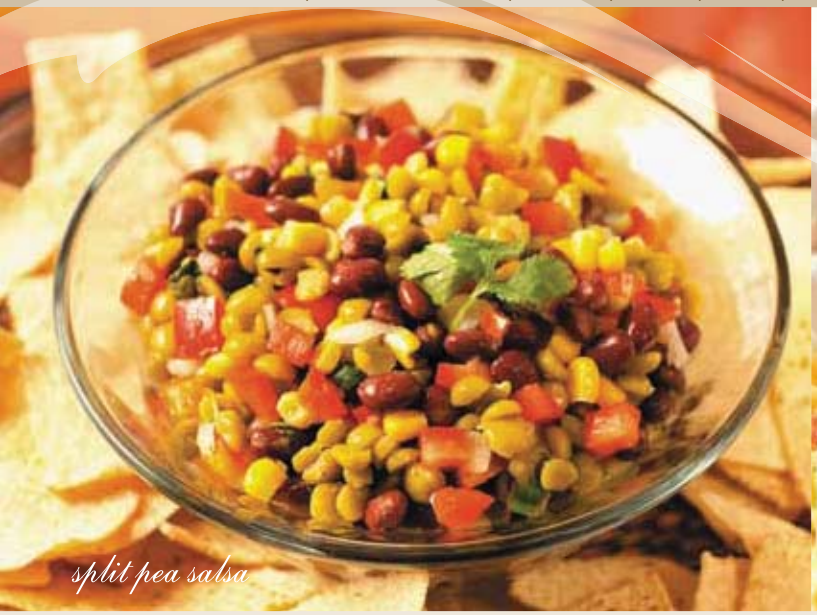
1 c. dry green or yellow split peas, rinsed
2 1/2 c. water
1 (19-oz.) can black beans, drained and rinsed
2 c. frozen corn
1/2 red bell pepper, chopped
1/4 c. fresh cilantro, chopped
1/4 c. lime juice
2 medium tomatoes, diced
1/2 c. onion, diced
1 tsp. ground cumin

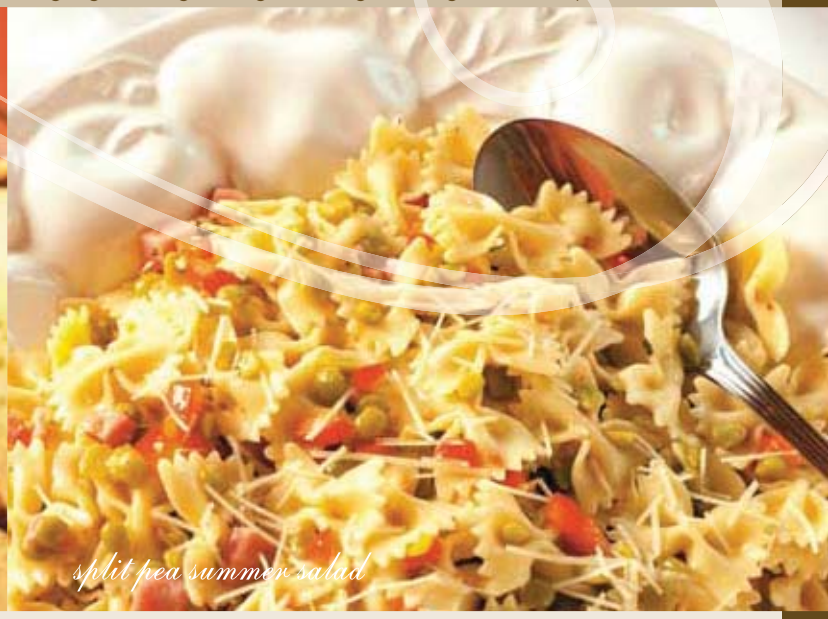
Optional seasonings (cayenne pepper, hot sauce, etc.)

In a medium saucepan, bring peas and water to a boil, reduce heat, cover and simmer until peas are tender (about 20 minutes). Drain and transfer to a large bowl. Wash and prepare all produce. Combine all ingredients in a large bowl. Serve with tortilla chips.

Makes 10 servings. Per serving: 110 calories, 0.5 g fat, 0.02 g saturated fat, 5 g protein, 20 g carbohydrate, 4 g fiber, 250 mg sodium, 1 mg iron and 23.7 mcg folate.

c. = cup oz. = ounce Tbsp. = tablespoon tsp. = teaspoon g = gram mg = milligram mcg = micrograms lb. = pound


split pea salsa


split pea summer salad

split pea summer salad

1/2 c. dry green split peas
1 1/2 c. water
16 oz. ham, cubed
2/3 c. Italian dressing (light)
8 oz. bowtie pasta
1 1/2 c. bell pepper, chopped
Salt and pepper to taste

Optional (sliced black olives)

In a medium saucepan, bring peas and water to a boil, reduce heat, cover and simmer until peas are just tender (about 20 minutes). Drain and transfer to a large bowl. Add dressing and set aside. Meanwhile, cook pasta until firm. Toss pasta, peas, pepper and ham. Add salt and pepper. Serve warm or chill and serve cold.

Makes 12 servings. Per serving: 150 calories, 4.5 g fat, 0.9 g saturated fat, 9 g protein, 19 g carbohydrate, 2 g fiber, 500 mg sodium, 1.2 mg iron and 54.7 mcg folate.

lentil mini pizzas

1/3 c. dry lentils, rinsed
1 1/3 c. water
4 (6-inch) whole-wheat pitas
1 medium zucchini, thinly sliced
1/4 c. red onion, thinly sliced into rings
1/2 c. red bell pepper, chopped
1/4 tsp. black pepper
1/8 tsp. salt
1/2 c. garlic-and-herbs spreadable cheese
6 Tbsp. shredded Asiago cheese (or cheese of choice)

In a 1-quart saucepan, combine lentils with water and bring to a boil; reduce heat, cover and simmer gently until lentils are just tender, about 25 minutes. Drain lentils and set aside. Preheat broiler and place pitas on a nonstick baking sheet; broil for 3 minutes. Heat a nonstick skillet over medium heat; coat with cooking spray. Add zucchini, onion, red bell pepper and salt. Sauté mixture for 3 minutes or until vegetables are crisp-tender. Stir in lentils. Remove pitas from the oven, then spread 2 tablespoons of spreadable cheese on each pita. Top evenly with vegetables and cheese. Broil 3 minutes or until edges are brown and cheese is melted.

Makes four servings. Per serving: 340 calories, 13 g fat, 7.2 g saturated fat, 13 g protein, 45 g carbohydrate, 7 g fiber, 710 mg sodium, 2.8 mg iron and 80 mcg folate.

lentil mini pizzas

chickpea and spinach curry

chickpea and spinach curry

2 Tbsp. margarine (butter optional)
2 medium onions, peeled and finely chopped
3 cloves garlic, minced
2 tomatoes, chopped OR 1 small apple, peeled, cored and chopped
3 Tbsp. flour
3 Tbsp. curry powder (or to taste)
2 c. vegetable stock
2 c. chickpeas (cooked or canned – drained and rinsed)
2 c. spinach, loosely chopped
1/2 c. seedless raisins, soaked in warm water

Heat margarine in a large skillet. Add onions and saute until golden. Add garlic and tomato. Cook over low heat until tomatoes (or apples) are soft. In a small bowl, combine flour and curry powder; stir into onion mixture. Cook to blend into thick paste. Using medium heat, gradually add stock, chickpeas and spinach, stirring often. Add raisins and cook to desired thickness. Serve over rice or white fish.

Makes eight servings. Per serving: 150 calories, 2 g fat, 0.3 g saturated fat, 6 g protein, 27 g carbohydrate, 4 g fiber, 240 mg sodium, 2.1 mg iron and 36.4 mcg folate.

hummus

1 (15.5-oz.) can chickpeas
4 Tbsp. tahini
1/4 c. lemon juice
3 cloves crushed garlic
1 tsp. salt

Optional spices (cumin, cayenne pepper, hot sauce)

Puree peas in blender or food processor. Add remaining ingredients and blend until smooth. The final product should be thick and smooth.

Makes 12 servings. Per serving: 70 calories, 3 g fat, 0.4 g saturated fat, 3 g protein, 10 g carbohydrate, 2 g fiber, 160 mg sodium, 0.7 mg iron and 29.3 mcg folate.

c. = cup oz. = ounce Tbsp. = tablespoon tsp. = teaspoon g = gram mg = milligram mcg = micrograms lb. = pound

hummus

chickpea chocolate cake

chickpea chocolate cake *(gluten-free)*

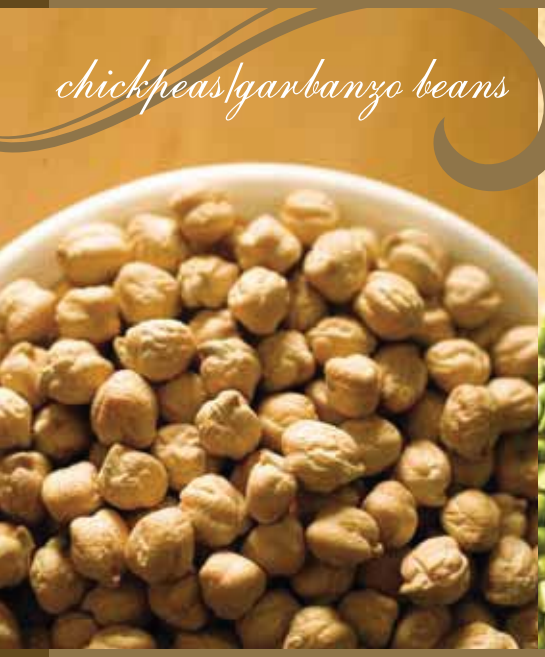
1 1/2 c. semi-sweet chocolate chips*
1 (15-oz.) can chickpeas, rinsed and drained
4 eggs
3/4 c. white sugar
1/2 tsp. baking powder*

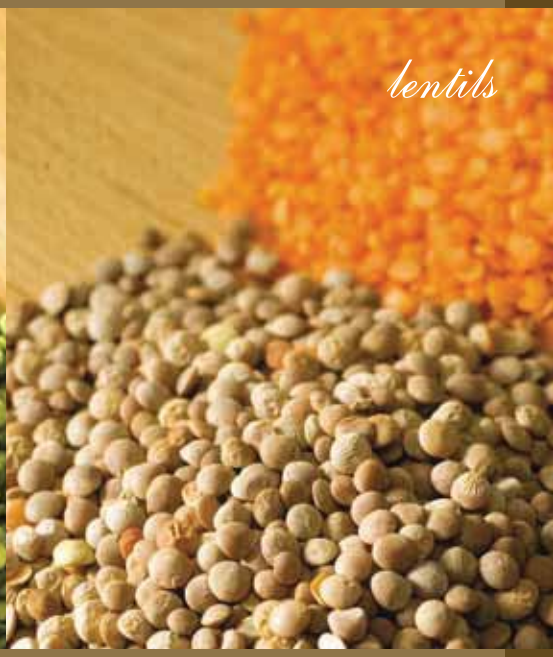
Optional toppings: powdered sugar, frosting or fresh berries

**Check that these items are gluten-free.*

Preheat oven to 350 degrees F. Grease 9-inch round cake pan. Melt chocolate chips in a microwave-safe bowl, stirring occasionally until chocolate is smooth. Combine chickpeas and eggs in food processor or blender and process until smooth. Add sugar and baking powder; blend. Pour in melted chocolate, then blend until smooth. Transfer batter to prepared cake pan. Bake for 40 minutes or until toothpick inserted in center of cake comes out clean. Cool on wire rack.

Makes nine servings. Per serving (without frosting): 320 calories, 13 g fat, 7.4 g saturated fat, 7 g protein, 47 g carbohydrate, 3 g fiber, 190 mg sodium, 0.8 mg iron and 10.4 mcg folate.





Northern Pulse Growers Association

Bismarck, North Dakota
www.northernpulse.com

NDSU
Extension Service
North Dakota State University

NDSU is an equal opportunity employer