



NUTRITION LIBRARY DIABETES

DIABETES AND CARBOHYDRATES

The prevalence of diabetes in the United States has skyrocketed over the last 20 years. Over 25 million Americans—**8.3 percent of the population**—currently suffer from the disease with 1.9 million new cases of diabetes diagnosed in 2010 alone.¹

Carbohydrates, particularly starchy carbohydrates like potatoes, are often singled out when discussing the dietary causes and management of diabetes, despite a lack of research supporting such connections. In fact, the causes of diabetes are not fully known. Genetic predisposition is certainly a factor, but evidence also points to the environmental triggers such as obesity and a sedentary lifestyle. Indeed, the American Diabetes Association has identified the key goal for prevention and treatment of diabetes as “developing healthy food choices and physical activity leading to moderate weight loss that is maintained.”²

WHAT IS DIABETES?

Diabetes is a metabolic disease that impacts the body’s production and/or utilization of insulin. In Type 1 diabetes the body fails to produce insulin; whereas in Type 2 diabetes the body produces insulin (and sometimes excessive amounts of it) but for a variety of reasons the insulin does not function as it should.

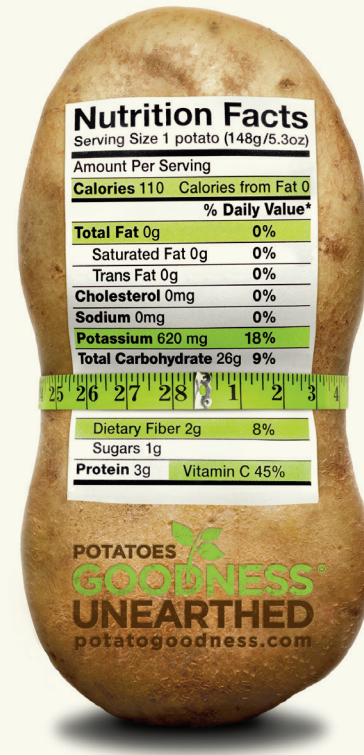
Insulin is a hormone that has a number of essential functions — one of the most important is the regulation of blood glucose levels. More specifically, insulin helps the cells of the body take up glucose from the blood.

This is beneficial for two reasons:

- 1) It provides the body cells with the glucose they need for energy and proper functioning,** and
- 2) It keeps blood glucose levels within a healthy range.**

If diabetes is “uncontrolled,” serious complications can occur. Glucose is essential to proper functioning of our brains as well as our muscles. Mismanaged or uncontrolled diabetes can, over time, lead to blindness, circulatory problems, nerve conditions, kidney disease/failure, leg and foot amputations, even death. Diabetes is also a major contributing risk factor for heart disease and stroke.

To prevent these effects, medical treatment is critical; people with diabetes need to rely on medications and often-times insulin — delivered via injections or pump — to regulate their blood glucose levels. In addition, nutrition therapy is essential to keep blood glucose in check.



CARBOHYDRATE CONTROVERSY

Because dietary carbohydrate not only stimulates insulin production but directly impacts blood glucose levels, it has historically been the focus of nutritional management of diabetes. Unfortunately, there has been a lot of conflicting information, and some outright misinformation published about carbohydrates and their role in diabetes.

For example, some groups tout the theory that carbohydrate foods can be classified as “good” or “bad” when it comes to their effect on blood glucose and insulin levels and, therefore, place in the diabetic diet.³ Starchy carbohydrates, like potatoes are often labeled “bad carbs” because of their supposed high glycemic index (GI).³ Nonetheless, existing research examining the role of GI in the genesis and/or management of diabetes is controversial, rendering definitive conclusions of the subject difficult. Indeed there are equally as many studies showing a beneficial role of GI for diabetes as those showing no benefit.⁴⁻⁶ Moreover, the studies implicating GI and, more specifically potatoes, in the development of diabetes have been epidemiological in nature (demonstrating only an association and not causation), have not differentiated between potato products (i.e., highly processed potatoes vs. fresh potatoes) and/or have not adequately controlled for potential confounding dietary and other lifestyle factors (e.g., fat intake, fruit and vegetable intake, red meat intake, fiber intake, physical activity, socioeconomic status etc.).⁷ When these confounding factors are controlled, any relationship between potatoes and diabetes disappears.

For example, in a recent study Drewnowski⁸ used data from two cycles of NHANES (2003-4 and 2005-6) to evaluate the association between potato consumption frequency and incidence of Type 2 diabetes. Statistical adjustment was made for potential confounding factors including race/ethnicity, education, diet quality, and physical activity. The results indicated that, after adjusting for potential confounding demographic and lifestyle factors, there was no association between the frequency of potato consumption and Type 2 diabetes.

The American Dietetic Association does not endorse the elimination of any food or food groups, but rather supports a “total diet approach” where “all foods can fit if consumed in moderation with the appropriate portions sizes.”⁹ Likewise, the American Diabetes Association conducted an extensive review of scientific studies and concluded that, for people with diabetes monitoring carbohydrate intake, whether by carbohydrate counting or experience-based estimation, remains a key strategy in achieving glycemic control.¹⁰

COUNTING CARBS & MAKING YOUR CARBS COUNT

Determining how much carbohydrate you need each day depends on many things including how active you are and what, if any, medicines you take.

A good place to start is to aim for about 45-60 grams of carbohydrate at a meal.¹¹ You may need more or less carbohydrate at meals depending on how you manage your diabetes. Once you know how much carbohydrate to eat at a meal, choose your food and the portion size to match. And don't shy away from potatoes; they can

make a significant contribution to your daily vitamin and mineral requirements. A 5.3 oz potato, eaten with the skin, delivers 45% of the Daily Value for vitamin C, 2 grams of fiber and more potassium than a banana (620 mg). The following potato servings provide about 15 grams of carbohydrate:

POTATO, BOILED 1/2 CUP OR 1/2 MEDIUM (3 OZ.)

POTATO, BAKED WITH SKIN 1/4 LARGE (3 OZ.)

POTATO, MASHED 1/2 CUP

If you have diabetes, use a meal plan that provides you with the amount of carbohydrate you need each day. If you don't have a plan, see a dietitian to create one that's right for you. For more information about meal plans for diabetes, contact the American Dietetic Association/Nutrition Hot Line (800-366-1655, www.eatright.org) or the American Diabetes Association (800-342-2383, www.diabetes.org).

1 American Diabetes Association: Diabetes Basics. Available at: <http://www.diabetes.org/> Accessed September 4, 2011.

2 American Diabetes Association: Nutrition recommendations and interventions for diabetes: A position statement of the American Diabetes Association. Diabetes Care. 2008;31(Suppl): S61-S78.

3 Burani J and Rao L. Good Carbs, Bad Carbs: An Indispensable Guide to Eating the Right Carbs for Losing Weight and Optimum Health. 2002. NY Marlowe & Co.

4 Marsh K, et al. Glycemic index and glycemic load of carbohydrates in the diabetes diet. Curr Diab Rep 2011. 11:120-127.

5 Mosdol A, et al. Dietary glycemic index and glycemic load are associated with high-density-lipoprotein cholesterol at baseline but not with increased risk of diabetes in the Whitehall II study. Am J Clin Nutr. 2007;86:988-94

6 Van Woudenberg GJ, et al. Glycemic index and glycemic load and their association with C-reactive protein and incident type 2 diabetes. J Nutr Metab. 2011; May 5 [Epub ahead of print]

7 Halton TL, et al. Potato and French fry consumption and risk of type 2 diabetes in women. Am J Clin Nutr. 2006;83(2):284-290.

8 Drewnowski A. Potatoes are not associated with obesity or type 2 diabetes when potential confounders are controlled. Unpublished data.

9 Freeland-Graves J and Nitzke S. Position of the American Dietetic Association: Total diet approach to communicating food and nutrition information. J Am Diet Assoc. 2007;107:1221-1232..

10 American Diabetes Association: Standards of Medical Care in Diabetes-2011. Diabetes Care. 2011;34:S12-S61.

11 American Diabetes Association. Carbohydrate counting. Available at: <http://www.diabetes.org/food-and-fitness/food/planning-meals/carb-counting/> Accessed September 6, 2011.

LIGHT AND LIVELY POTATO SALAD

INGREDIENTS

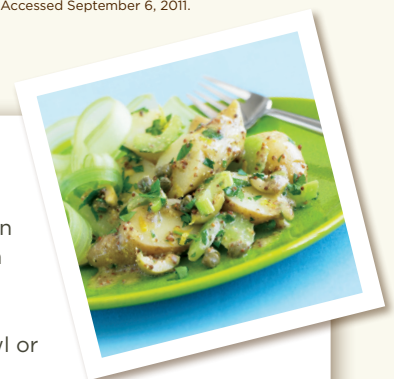
- 1 1/2 pounds fingerling potatoes, assorted colors
- 1 tablespoon champagne vinegar
- 1 1/2 teaspoons whole-grain mustard
- 1 1/2 teaspoons grated lemon zest
- 1/4 cup olive oil
- Salt and pepper, as needed
- 1/2 cup thinly sliced celery
- 1/2 cup roughly chopped Italian parsley
- 1/3 cup roughly chopped pitted green olives
- 1/4 cup capers, rinsed
- Celery curls, optional*

DIRECTIONS

In large bowl, whisk together vinegar, mustard and lemon zest. Slowly whisk in oil; season with salt and pepper. Fold in potatoes and remaining ingredients, except celery curls; adjust seasoning. Marinate for a few hours. Mound in bowl or on individual salad plates; garnish with celery curls. Makes 6 servings.

**To make celery curls, with vegetable peeler, shave celery into long strips. Place in ice water for several hours or until strips curl.*

FOR A COMPLETE MEAL: Stir 2 cups coarsely shredded rotisserie chicken, or 3 coarsely chopped hard-cooked eggs, into salad.



NUTRITIONAL ANALYSIS PER SERVING: 194 calories; 22 g carbohydrates; 11 g fat; 0 mg cholesterol; 416 mg sodium; 4 g fiber; 3 g protein; 545 mg potassium; 30 mg vitamin C.

For more healthy potato recipes and nutrition, please visit potatogoodness.com

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