The “Second Meal” Effect Of Dry Beans and Lentils Offers Health Benefits

By Joanne Slavin, PhD, RD and Angela Bonnema, MS

Obesity in the United States is a public health concern with rates exceeding 30% of adults in the obese category and 70% of adults combined in the overweight and obese categories.¹ With obesity, the risk of other metabolic conditions increases, including type 2 diabetes, cardiovascular disease, hypertension, and stroke.² The prevalence of type 2 diabetes is rising with current estimates reaching 26 million (8.3% of the population) in this country.³

The increase in obesity has been linked to dietary changes favoring refined, processed foods and, consequently, decreased consumption of whole food products.⁴ Food companies have focused solutions on foods that are commonplace in the diet that may have a positive impact. Industry strategies toward reducing obesity rates have included functional foods and pharmaceuticals. In contrast, a shift back to the consumption of whole foods may be an important part of the solution.

**Glycemic Response**

The glycemic index (GI) of a food is the ranking of a carbohydrate on a scale of 0 to 100 according to the extent to which it raises blood sugar levels over a 2-hour period after eating (i.e., immediate effect on blood sugar levels) compared to glucose.⁵ The rating provides a ranking for various foods but this value is arbitrary in that it does not take into account the amount of the specific food consumed. The glycemic load accounts for serving size of the food by taking the GI of a food multiplied by the grams of available carbohydrate in the serving. The glycemic response (GR) is then the effect that the carbohydrate-containing food has on blood glucose concentration during the digestion process.

Low-GI foods, by virtue of their slow digestion and absorption, produce gradual rises in blood glucose and insulin levels, and may thus have potential benefits for health, including improved glucose tolerance for individuals with diabetes or high-risk of diabetes, weight management, improved lipid parameters, and decreased fat mass. Low GI diets have not only been shown to improve both glucose and lipid levels in people with diabetes (type 1 and type 2),⁶,⁷ but they also have shown the potential to decrease the risk of developing type 2 diabetes.⁸

**Macronutrients at Play**

Legumes, such as dry beans, are rich in a number of nutrients including protein, complex carbohydrates, and dietary fiber, with a significant level of vitamins and minerals. These nutrients can positively affect blood glucose levels and improve glycemic control.

**RD/RDN Takeaway #1:**

Legumes are a low glycemic food that have the ability to decrease glycemic response both at the first and second meal.

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minerals, as well. The content of protein, slowly digestible carbohydrates, and high fiber, along with moderate energy density, provide a number of positive attributes for glycemic control, a higher satiating diet, and an aid in weight management.19-22

The fiber content in legumes is predominantly insoluble (wide range of 1/3–3/4, with the remaining being soluble) and typically ranges from 15%–32%.23 The blend of soluble and insoluble fiber provides a range of positive effects such as fecal bulking, fermentable substrate, and viscous fiber which can slow gastric distention and emptying. In addition to the dietary fiber content including resistant starch, legumes also contain oligosaccharides that are highly fermentable. Specifically, the oligosaccharides are α-galactosides (α-1, 6 linked galatosyl groups attached to a sucrose molecule) but are generally referred to as raffinose (1 group), stachyose (2 groups), and verbascose (3 groups).24 This has, historically, provided legumes with a negative association, but fermentation of indigestible carbohydrates is beneficial and leads to the generation of short chain fatty acids (SCFA) and may therefore not be considered prebiotic25 but can also impact gut hormones related to blunted glycemic response and reduced appetite at the second meal.26

RD/RDN Takeaway #3:
Colonic fermentation may play a large role in the second meal effect of beans.

Bean Intake and Body Weight
Bean intake could potentially be useful in weight management over time. A study comparing the intake of rice and beans to lean meat for 8 weeks revealed a greater weight loss at 4 weeks in the bean group.27 In contrast, an 8 week intervention found the legume meal to result in significant weight loss, equal to the meat, egg and lean dairy group, when compared to a fatty fish diet and control diet.28 Both animal and plant proteins consumed at higher levels in the diet have been linked to increased satiety, decreased food intake, and increased weight loss.29-31 When consuming an energy deficient diet, pulses have been shown to have a significantly greater weight loss after 8 weeks compared to a control diet, -7.8 kg compared to -5.3 kg, respectively.32 In the context of a low glycemic index diet, the intake of legumes in combination with whole grain bread resulted in 0.6 reduction in body mass index (BMI) and 1.5 kg weight loss compared to no change with a high glycemic control diet.33

RD/RDN Takeaway #4:
The evidence suggests that the unique nutrients of legumes may also lead to reduced appetite, reduced food intake, and, possibly over time, weight loss.
Berry Bean Smoothie

Try this unique smoothie recipe for breakfast, lunch, or snack time.

Ingredients

15 oz. cooked and cooled Great Northern beans (substitute one can of beans, drained and rinsed, if desired)
1 cup orange juice
2 cups quartered strawberries, fresh or frozen
1 8 oz. can crushed pineapple with juice
3 Tablespoons honey
1 teaspoon ground cinnamon
¼ teaspoon vanilla extract
6 to 8 ice cubes (crushed works best)

Preparation

1. In a blender or food processor, process all ingredients, except ice cubes.
2. Add ice cubes and blend until smooth.
3. Serve in glasses.

YIELD: 8 servings
SERVING SIZE: 6 ounces

NUTRIENT INFORMATION PER SERVING:
Calories: 125; Fat: 0g; Protein: 4g; Total Fiber: 3.5g; Cholesterol: 0g; Calcium: 39.5mg (4%); Iron: 1mg (6%); Sodium: 6mg.

More recipes available at BeanInstitute.com
Managing Editor’s Note

Hello, DBQ Readers,

We know you have developed innovative strategies to help improve the health of your clients and patients. If you would share your most successful strategy with us, we would like to print it in a future DBQ. Of course, we are most interested in strategies that involve beans but we would be interested in what works for you! Just email me at DBQ@mail.com.

Sincerely,

Ed Stroesser,
Managing Editor

Editor’s Note: Beginning with this issue, we will feature strategies and ideas from RDs/RDNs who recommend beans to their clients and patients. We recently received this email from a reader.

Dear Editor,

I received the latest Dry Bean Quarterly and noticed that in your piece on cooking dry beans you didn’t mention the no-soak method, which is the method I use to cook them and is very easy.

I rinse the dry beans in a colander and pick out the cracked beans and any stones; then I cook them on high in my crock pot, with water to cover, for 5½ to 6 hours. If one is home for the day or evening, this is a convenient way to go. I cover the crock pot with foil to keep the water from boiling away, but you may want to check every few hours and add more water, if needed.

That’s it. Perfect beans and soooo easy. Then I cool them, pack 2-cup portions flat in freezer bags, and always have beans ready to go for recipes.

In health,

Mary Saucier Choate, MS, RD, LD
Hanover, NH

Want more information about dry beans? Like us on Facebook and follow us on Twitter and Pinterest.