

Beans and Obesity

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Introduction

Part one of this series dealt with the relationship between bean intake and cancer. The evidence relating elevated blood glucose and insulin to promotion of colon cancer was discussed also. This issue will expand on the negative aspects of hyperglycemia and hyperinsulinemia as they relate to over consumption of calories and development of excess body fat (overweight or obesity).

Common Threads Among Chronic Diseases - Hyperglycemia, Hyperinsulinemia, and Excess Body Fat

We have known for sometime that dietary practices that increase the risk for developing cardiovascular disease also increase the risk for developing cancers of the colon, breast, and prostate. We also knew that excess body fat and chronic elevation of blood glucose and insulin were interrelated. Research now links excess body fat, hyperglycemia (elevated concentrations of blood glucose), and hyperinsulinemia (elevated concentrations of blood insulin) to the onset of chronic diseases.

Ludwig in an article in the Journal of the American Medical Association (1) summarizes research regarding carbohydrate consumption patterns and the onset of obesity, diabetes, and cardiovascular disease. He presents a scientific explanation as to why the type of carbohydrate we eat has such a strong influence on food intake, maintenance of normal blood glucose and insulin concentrations, and the occurrence of chronic diseases.

Dietary Carbohydrate and Control of Caloric Intake

Eating high glycemic index foods (see issue 1 for an explanation of glycemic index) cause people to desire to eat sooner after their last meal than if they ate low glycemic index foods (2, 3). In addition, eating a high glycemic index meal produces the tendency to select high glycemic foods for a snack or for the next meal. This sets up a vicious cycle that leads to a greater caloric intake and greater blood glucose and insulin concentrations (1). With time, obesity and type 2 diabetes develop. On the other hand when low glycemic foods are consumed, there is greater satiety and people don't feel hungry as quickly. Also the tendency to select high glycemic index foods for snacks or the next meal is reduced. Therefore, the likelihood of excessive calorie consumption is reduced and so is the likelihood of becoming obese and a type 2 diabetic.

Excess body fat increases the risk of developing heart disease, strokes, type 2 diabetes mellitus, and some types of cancer (4). There has been a steady increase in the percentage of overweight and obese individuals in North America and Western Europe. The increase in obesity is considered to be of epidemic proportions in the U.S. (5) and in most developed countries (4-8). For example, on a worldwide basis, more than one billion adults are overweight and more than 300 million are obese (4, 6). In the U.S. more than 60% of the adult population is overweight or obese (7). Obesity and overweight account for approximately 300,000 deaths per year in North America (9, 10) and the cost associated with excess fatness is estimated to be greater than 117 billion dollars per year (11). Most of the costs associated with excess fatness are related to type 2 diabetes, heart disease, and high blood pressure (12). Perhaps even more disturbing is the great increase in overweight and obese children and adolescents (8). Accompanying the rise in excess

fatness is the increased incidence of type 2 diabetics in children and adolescents. Soon we will experience a tremendous increase in morbidity and mortality resulting from complications of diabetes and obesity in children and adolescents.

While many factors contribute to being overweight and obese, over consumption of food and/or inadequate physical activity are the main factors causing excess fatness for most individuals. Nearly all people struggle to maintain appropriate caloric balance. Thus, it is important to select low glycemic index foods to help reduce our struggle rather than select high glycemic index foods that accentuate the struggle. Compared to other carbohydrate sources, beans have a low glycemic index, varying from 26-42 % relative to glucose (13). Beans are also high in fiber (typically 18% dietary fiber) and low in fat. Thus, beans have a low caloric density. Some health scientists prefer to emphasize high fiber foods with low caloric density rather than the concept of glycemic index or glycemic load. Regardless of the approach, beans are a highly desirable food since they have a low glycemic index and at the same time they are a high fiber, low caloric dense food. While eating beans will not magically make you thin or make you loose weight, substituting beans for highly-refined cereal products, foods or beverages with a high sugar content, potatoes, or any high glycemic index food will help curb caloric intake and help maintain a leaner physique.

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