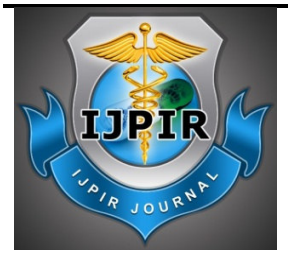
Research Article



ISSN Print 2231 – 3648
Online 2231 – 3656

Available Online at: www.ijpir.com

International Journal of Pharmacy and Industrial Research

Nutral-D Powder: A perfectnutrition for diabetics

Govind Shukla, C. Subrahmanyam, Mantipally Yamuna, Aishwarya Pothuganti, Akanksha Sonal Khess, C.J Sampath Kumar

Lactonova Nutrition Research centre Hyderabad, A Unit of Lactonova Nutripharm (P) Ltd, Makers of NUTRAL-D Powder81/3, IDA Mallapur, Hyderabad, Telangana, India-500 076.

ABSTRACT

Diabetes is a chronic disease in which food is not properly absorbed in the body to be used as energy. This results in high levels of sugar in the blood. During the normal process of digestion, food is consumed and broken down into small sugar particles called glucose. The glucose enters the blood stream and is moved into the body's cells, where it can be used as energy. Insulin is a hormone that is produced by the pancreas. People with diabetes have too little insulin production, their body is unable to use insulin properly (insulin resistance), or both. This does not allow glucose to be moved into the body's cells, which results high levels of glucose in the bloodstream. There are four major conditions associated with high blood glucose levels: pre-diabetes, type 1 diabetes, type 2 diabetes, and gestational diabetes. Diabetes is the seventh leading cause of death and has no cure. The three cornerstones of diabetes management are: diet, physical activity, and medication, if necessary (i.e., insulin or oral glucose-lowering agents).The three cornerstones of diabetes management include nutrition, physical activity, and medication. NUTRAL-D Powder Provides A PERFECT NUTRITION FOR DIABETICS.

Keywords: NUTRAL-D Powder, Nutrition, Diabetics.

INTRODUCTION

Pre-Diabetes

Pre-diabetes is a term used for people who are at increased risk for developing diabetes. People with pre-diabetes have blood glucose levels that are higher than normal but not high enough to be diagnosed with diabetes. Studies show people with blood glucose levels that fall into the pre-diabetes range have a high risk for developing diabetes within 10 years. If a person has a higher risk for developing diabetes, there are three tests which may be conducted to determine if they have pre-diabetes. These three tests are the A1C test, the fasting plasma glucose test, and the oral glucose tolerance test. If a person is diagnosed with pre-diabetes, they can still make lifestyle changes to prevent the diagnosis of type 2 diabetes. Ways to prevent diabetes include keeping a healthy weight (or losing weight if overweight), staying active most days of the week, and eating lowfat meals

Author for Correspondence:
Govind Shukla
Lactonova Nutrition Research centre Hyderabad, A Unit of Lactonova Nutripharm (P) Ltd, Makers of NUTRAL-D, Powder81/3, IDA Mallapur, Hyderabad, Telangana, India-500 076.

that contain many fruits, vegetables and whole grain foods.

Type 1 Diabetes

Diabetes is categorized as type 1 or type 2, based on the underlying physiological problem. Type 1 diabetes, formerly known as insulin-dependent diabetes mellitus (IDDM) or juvenile diabetes, is characterized by the destruction of the pancreatic beta cells that produce insulin. The end result is absolute insulin deficiency. Insulin must be taken regularly. Type 1 diabetes occurs most often in children and young adults, but can occur at any age. Previously, people who took insulin had to follow a rigid pattern of eating. This sometimes created conflicts that resulted in varying degrees of noncompliance.

The current recommendations are more flexible. Integrating insulin therapy into the individual's usual eating and exercise patterns is suggested. This approach allows a person to adjust the timing and quantity of insulin injected according to their monitored blood glucose levels.

A primary treatment goal in type 1 diabetes should be tight blood glucose control. Frequent blood glucose monitoring is recommended. Blood glucose monitoring can show which foods, physical activities, and times of the day elevate an individual's blood glucose level. By adjusting insulin dose to meet needs, a person may have more near-normal blood glucose levels, which may help reduce the risk for shortand long-term complications.

It is still highly recommended that people using fixed daily insulin therapy eat at consistent times and consume consistent amounts of carbohydrates to synchronize with the time-action of the insulin preparation they are using. However, by using rapid acting insulin by injection or an insulin pump and frequent monitoring of blood glucose levels, people with diabetes can quickly adjust to account for changes from their usual eating and exercise habits.

Type 2 Diabetes

Type 2 diabetes, formerly known as non-insulin dependent diabetes mellitus (NIDDM), is by far the most common form of the condition. Type 2 diabetes develops because of insulin resistance, in which the body is unable to use insulin properly, combined with a relative (not absolute) insulin deficiency. The risk of developing type 2 diabetes increases with age, obesity, and lack of physical activity. Typically, adults with type 2 diabetes are over age 45, overweight and sedentary, have a family history of diabetes, and have high blood pressure and high cholesterol. There has also been a recent alarming trend in thetype 2 diabetes developing in adolescence. These youth developing type 2 diabetes tend to be older than 10 years of age, experiencing puberty, and have a strong family history of type 2 diabetes.

Type 2 diabetes is also more common in African Americans, Latinos, NativeAmericans, Asian-Americans and Pacific Islanders. If uncontrolled, type 2 diabetes can lead to serious long term complications. Complications include heart disease and stroke, hypertension, blindness and eye problems, kidney disease, nervous system disease, amputations, dental disease, and complications of pregnancy.

Achieving and maintaining weight loss has long been a primary dietary focus for people with type 2 diabetes. Total calories consumed should be sufficient to maintain a desirable weight and prevent weight gain. Physical activity on a regular basis is recommended. Aiming for blood glucose control, along with normal blood lipid levels and normal blood pressure are also important goals. These factors, if controlled, help reduce the risk of longterm complications of diabetes.

Gestational Diabetes

Gestational diabetes begins or is first diagnosed during pregnancy. Often times, this type of diabetes may be caused by pregnancy hormones, occurs towards the end of a women's pregnancy, and will go away once the baby is born. Women are at a higher risk for gestational diabetes if they are older than age 25, have a family history of diabetes, have high blood pressure, have too much amniotic fluid, were overweight before pregnancy, or give birth to an infant weighing greater than 9 pounds. Women with gestational diabetes during pregnancy have a 35-60% chance of developing diabetes in the next 10-20 years. Therefore, it is important for women with gestational diabetes to take steps to reduce their risk for developing type 2 diabetes later in life.

Diagnosis of Diabetes

Diagnosis of diabetes is determined through A1C levels, fasting plasma glucose levels, oral glucose tolerance tests, or random plasma glucose tests. Criteria for diagnosis of diabetes are:

- A1C levels greater than or equal to 6.5%,
- Fasting plasma glucose levels greater than or equal to 126 mg/dL,
- Plasma glucose levels greater than or equal to 200 mg/dL following an oral glucose

tolerance test, orRandom plasma glucose levels greater than or equal to 200 mg/dL.

A1CHemoglobin A1C is a test which measures the average plasma glucose concentrations over a 2-3 month period of time. A1C levels are normal at less than 5.7%, indicate pre-diabetes when greater than or equal to 5.7% but less than 6.5%, and indicate diabetes when greater than or equal to 6.5%.

Fasting Plasma Glucose

Fasting plasma glucose is measured when a person has had no caloric intake for greater than 8 hours. Fasting plasma glucose levels are normal when less than 100 mg/dL, indicate pre-diabetes when greater than or equal to 100 mg/dL but less than 126 mg/dL, and indicate diabetes when greater than or equal to 126 mg/dL.

Oral Glucose Tolerance Test

During an oral glucose tolerance test, a person consumes 75 grams of glucose dissolved in water. Two hours following the consumption of glucose, the person's plasma glucose level is measured. Plasma glucose levels are normal when less than 140 mg/dL, indicate pre-diabetes when greater than or equal to 140 mg/dL but less than 200 mg/dL, and indicate diabetes when greater than or equal to 200 mg/dL.

Target Goals

People with diabetes should aim for goals to lower blood pressure and normalize blood lipid levels. Appropriate target goals for people with diabetes are blood pressure levels less than 130/80 mmHg, LDL cholesterol less than 100 mg/dL, HDL cholesterol greater than 50 mg/dL, and triglyceride levels less than 150 mg/dL.

Dietary Recommendations

An initial dietary strategy for those with diabetes is to improve food choices to better meet the recommendations of the 2010 Dietary Guidelines for Americans and MyPlate released by the U.S. Department of Agriculture. Reducing fat, especially saturated fat and trans fat, cholesterol, and sodium, and increasing physical activity are highly recommended. Individuals should plan to eat meals throughout the day to spread nutrient intake. Even mild to moderate weight loss (5-10% of body weight) has been shown to improve diabetes control. Lifestyle changes that moderately decrease calorie intake (250 to 500 kcal/day) and increase energy expenditure are strongly encouraged. Blood glucose monitoring may also be used to determine if lifestyle modifications are sufficient to achieve blood glucose control or if additional medications are necessary to be combined with nutrition therapy.

COMPOSITION OF NUTRAL-D POWDER

Nutrition is critical to adults with type 2 diabetes. They will have to control portions, eat regularly and eat nutrient-rich foods, along with other dietary guidelines.

COMPOSITION : EACH 15 GMS TINCONTAINS

Protein (Nitrogen 11.1)	: 30 %(Derived from Soya & Milk Source)
Carbohydrates	: 6 gms
Fiber	: 70 mg
Soluble Fiber	: 500 mg
Insoluble Fiber	: 1.5 gms
Niacin amide	: 30 mg
Vitamin B1	: 3 mg
Vitamin B2	: 3 mg
Vitamin A	: 2500 IU
Vitamin D3	: 500 IU
Vitamin B12	: 3 mcg
Vitamin C	: 3 mg
Folic acid	: 1.0 mg
Zinc	: 5.0 mg
Magnesium	: 12 mg
Calcium	: 600 mg
Iodine	: 1.0 mg
Iron	: 5.0 mg
Phosphorus	: 500 mg

Protein

It is recommended that protein intake account for 15 to 20% of total daily calories consumed for the general population as well as for those with diabetes. There is no evidence to indicate the usual protein intake should be modified if kidney (renal) function is normal. A protein intake above 20% of total daily calories may have a detrimental effect in the development of nephropathy (renal disease).

Fat

The most life-threatening consequences of diabetes are cardiovascular disease(CVD) and stroke, which occur in people with diabetes more often than others. The risk for death among people with diabetes is about twice that of people of similar age but without diabetes. Diabetes itself is a strong independent risk factor for CVD. Thus, steps that help reduce this risk are important, such as choosing heart healthy fats. A person with

diabetes should choose foods containing saturated fats less often, foods containing polyunsaturated fats occasionally, and foods high in monounsaturated fats more often.Saturated Fat, Trans Fat, and Cholesterol. Saturated fats are found in meats, high-fat dairy products, lard, and coconut, palm, and palm kernel oil. They are usually solid at room temperatures and raise low density lipoprotein (LDL) cholesterol levels. The effect of trans fat is similar to saturated fat in raising LDL cholesterol. In addition, trans fat lowers HDL cholesterol, which is not desirable.

Foods containing trans fats include stick margarine, shortening, peanut butter, and many processed baked goods like crackers, cookies, and sweet breads. Cholesterol is found in most foods from animal sources.

Some individuals make more cholesterol than others which puts them at risk and contributes to high cholesterol levels, while other people have high cholesterol because they eat too much in their diet. Following a heart healthy meal plan includes limiting foods high in saturated fat, trans fat, and cholesterol.

Polyunsaturated Fat

Polyunsaturated fats are more heart healthy that saturated fat or trans fat. When eaten in moderation, they lower cholesterol levels. Polyunsaturated fats are found in many vegetable oils such as soybean, corn, and safflower oil, and fatty fish such as salmon, mackerel, herring, and trout. Two or more servings of fish per week are recommended for people with diabetes (excluding commercially fried fish fillets).

Monounsaturated Fat

Monounsaturated fats are the most heart healthy fats. They lower LDL cholesterol. Foods high in monounsaturated fats include olive oil, canola oil, walnut oil, peanut oil, avocados, olives, nuts, and seeds.

Omega-3 Fatty Acids

Omega-3 fatty acids are a type of polyunsaturated fat believed to have many health benefits. Research suggests that consuming omega-3 fatty acids found in fish and fish oils can protect a person from CVD, and may decrease insulin resistance in people with diabetes. There are three types of omega-3 fatty acids. Alpha-linolenic acid (ALA) is found in vegetable sources, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are found in fish and other marine life. The richest dietary source of omega-3 fatty acids is oily cold-water fish such as salmon, sardines, mackerel, and herring. Omega-3 fatty acids can also be found in nuts (especially walnuts), flax seeds, canola oil, and specially fortified eggs.Total fat intake for people with diabetes should be 20 to 35% of total calories. 'Saturated fat should be limited to less than 7% of total calories, polyunsaturated fat should be limited to less than 10% of total calories, and monounsaturated fat should be limited to less than 20% of total calories. Dietary cholesterol should be less than 200 mg/day. Elevated levels of triglycerides (greater than 150 mg/dl) are also a risk factor for CVD. The addition of exercise may result in greater decreases in total and LDL cholesterol and triglycerides, and prevent a decrease in high density lipoprotein (HDL) cholesterol.

Carbohydrates

Carbohydrates are an important fuel source for the body. They are found in breads, starches, fruit, and dairy. When a carbohydrate containing food is consumed, the carbohydrate is broken down into glucose. Glucose provides fuel for the body and is essential for life. Glucose is carried through the blood stream into the cells with the help of insulin. Once in the cells, the glucose can be used for energy.Carbohydrates raise blood glucose levels, therefore people with diabetes may need to balance carbohydrate intake with insulin, medications, and physical activity. Sugar. It was previously believed that simple sugars are more rapidly digested and absorbed than starches, and therefore are more likely to cause high blood sugar levels. This premise has not been supported by scientific evidence. Current guidelines allow the use of sugar and sugar-containing foods in modest amounts as part of a balanced diet. It should be remembered, however, that sugar-containing foods must be substituted for other carbohydrate foods and not simply added on top of what is eaten. The first dietary consideration for a person with diabetes should be the total amount of carbohydrate eaten.

Non-nutritive Sweeteners. Saccharin, aspartame, acesulfame potassium (K), sucralose, and neotame have been approved by the Food and Drug Administration (FDA) and can be used by people with diabetes, including pregnant women, within a balanced diet. Because saccharin can cross the placenta, other sweeteners are better choices during pregnancy.

Fiber

Fiber recommendations for people with diabetes are the same as for the general population. People should consume 14 grams of fiber per 1000 calories, or 25 grams for adult women and 38

grams for adult men, from a wide variety of sources daily. Of the recommended total fiber intake, 10 to 25 g/day should come from soluble fiber. Because of the potential beneficial effect of soluble fibers on blood lipids and glucose metabolism, people with diabetes are advised to get adequate amounts of fiber from the carbohydrates they eat. Good sources of soluble fiber include oat products, many fruits and vegetables, cooked beans, rice bran and psyllium seeds. It is recommended that if adults with diabetes choose to consume alcohol, daily intake should be limited to a moderate amount (one drink per day or less for women and two drinks per day or less for men). Moderate alcohol consumption (when ingested alone) has little short term effect on glucose and insulin concentrations. However, carbohydrates consumed with alcohol, such as mixed drinks, can raise blood glucose. Individuals using insulin or medications that increase insulin secretion, who also consume alcohol, should consume food with the alcohol to reduce the risk of nocturnal hypoglycemia (low blood sugar levels at night).

Physical Activity Recommendations

Regular physical activity is an important factor in diabetes management. It has been shown to improve blood glucose control, reduce cardiovascular risk factors, contribute to weight loss, and improve well-being. People with diabetes should participate in at least 150 minutes per week of moderate-intensity aerobic physical activity (at 50-70% of maximum heart rate).

Methods for Planning Diets

Glucose control is a balancing act. Carbohydrate foods raise blood glucose while insulin and physical activity lower blood glucose. To effectively control blood glucose, people with diabetes need to balance the amount of carbohydrate they eat, the type and amount of physical activity they do, and the diabetes medication they take. Dietary management of diabetes should be designed to meet total nutrient and health needs, not just blood glucose needs. The diet plan should begin with an assessment of the individual's usual eating habits, including food likes and dislikes, eating and work schedules, as well as treatment goals identified by the health care team. The better dietary management fits into one's usual routine, the more likely it is to be successful. The following diet planning systems can be helpful when planning meals and snacks for people with diabetes. The Plate Method is the recommended diet plan for people with diabetes. Other methods include diabetic exchange diets and carbohydrate counting.

Plate Method

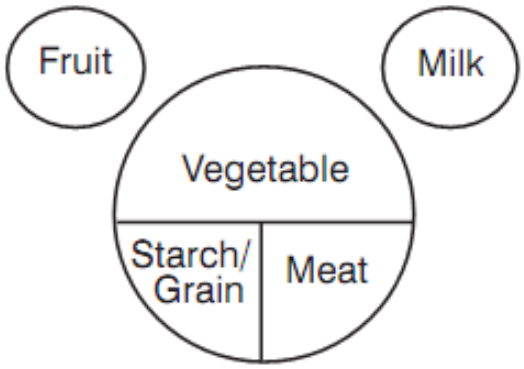


Figure 1: The Plate Method.

The Plate Method is a simple method for teaching meal planning. A 9-inch dinner plate serves as a pie chart to show proportions of the plate that should be covered 1/2 –inch deep by various food groups. This meal planning approach is simple and versatile. Non-starchy vegetables (5 to 10 grams of carbohydrate) should cover 50 percent of the plate for lunch and dinner. The remainder of the plate should be divided between starchy foods (2 to 3 carbohydrate choices is about 30 to 45 grams of carbohydrate), such as bread, grains, or potatoes, and a choice from the meat group. A serving of fruit (1/2 cup is about 15g of carbohydrate) and non-fat or low-fat milk (1 cup is about 12g of carbohydrate) are represented outside the plate.

CONCLUSION

Diabetes is a complex disease. With the proper treatment considering diet, physical activity, and pharmacological therapy, the disease can be effective managed. Maintaining near normal blood glucose, blood lipid, and blood pressure levels can prevent short term and long term complications associated with diabetes. There are many treatment plans to manage diabetes, which may be tailored to best meet the individual's needs.NUTRAL-D Powder Provide A PERFECT NUTRITION FOR DIABETICS.

REFERENCES

[1] Nutrition Recommendations and Interventions for Diabetes. Diabetes Care. 2008; Volume 31, Supplement.
[2] 2.Standards of Medical Care in Diabetes – 2012. Diabetes Care. 2012; Volume 35, Supplement 1.
[3] 3.National Center for Chronic Disease Prevention and Health Promotion. National Diabetes Fact Sheet, 2011.
[4] 4.Centers for Disease Control and Prevention. 2011.