

**DEPARTMENT OF ENDOCRINOLOGY, DIABETES & METABOLISM,
CHRISTIAN MEDICAL COLLEGE, VELLORE**

DIETARY INFORMATION FOR DIABETES PATIENTS

Role of Diet in Diabetes

Diet plays an important role in the management of Diabetes Mellitus. Eating the right foods at the correct time is crucial for maintaining acceptable blood glucose values. Knowing what food to eat, when to eat and how much to eat, helps one to monitor blood glucose levels and maintain it within the normal range. This gives him/her the confidence to lead a healthy normal life and achieve his/her maximum potential.

What is food composed of?

Foods we eat contain various components. This includes nutrients, fibre and water. Their role in our body is explained below:

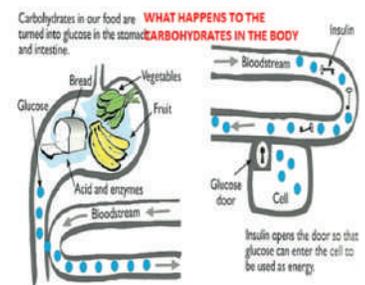
- **Carbohydrates- gives us energy**
- Proteins- body building
- Fat- gives us energy
- Vitamins –regulates body functions
- Minerals- regulates body functions
- Fibre- regulates blood glucose levels
- Water- regulates various functions



Carbohydrates directly cause an increase in the blood sugar levels. There are different types of carbohydrates and their effect on raising the blood sugar levels vary.

What happens to Carbohydrates in the body?

Carbohydrates are broken to sugars. This enters every body cell with help of insulin to provide energy. When food is broken into sugars, it enters the blood stream. Some foods are broken faster and appear in the blood stream quickly. Some foods take longer to be broken, hence appear slower in the blood stream.



Glycaemic index of foods

Glycaemic index is a measure of the rise in blood sugar after consumption of a particular food as compared to a reference food. Foods are classified according to their glycaemic index. They are foods with high GI, moderate GI and low GI. The foods with high GI are easily digested by the body and readily appear as blood sugar in the blood stream. Those with a low GI is less readily appearing in the blood stream. High GI foods must be restricted and those with low GI must be encouraged.

- High (>70) Cereals ► Medium (56-69)Vegetables ► Low (<55) Legumes, millets

Very High sugar foods

Foods like table sugar, honey, jaggery are called simple sugars since they are readily digested by the body resulting in a sudden rise in blood sugars. They have a very high GI. These sugars are incorporated in foods like sweets, soft drinks, pastries, cakes and they are best **avoided**.

High carbohydrate foods

Carbohydrates form the major portion of our Indian diet. Food items like rice, idli, dosa, chapathi, appam, puttu, paratta have a high proportion of carbohydrates (65-80%). These foods are easily digested and cause an elevation in blood sugars. They have a high GI. They should be eaten in limited amounts to prevent high blood sugars. Underground vegetables like potatoes, yam, colocasia, tapioca are also starchy foods and must be **restricted**.

Moderate carbohydrate food

Whole gram pulses are moderate sources of carbohydrates (55-60%). However carbohydrates present in pulses are only gradually released into the blood stream. This is because of their high fibre content. Hence including them in meals helps to keep blood sugars under control. They are the low GI foods.

What is fibre? Is it good for health? Fibre is a type of carbohydrates present in food which our body cannot digest. It gets evacuated with the faeces. Previously fibre was considered a waste product with no health benefits. But scientific studies have proved that fibre has immense advantages. The benefits of fibre are that it:

- ✓ **Lowers sudden rise in blood sugars- lowers glycaemic index of foods.**
- ✓ **Lowers cholesterol levels in blood**
- ✓ **Provides satiety**
- ✓ **Aids in easy bowel movements**
- ✓ **Helps in weight reduction**

Which foods contain fibre?

- Whole grains- unpolished rice, whole wheat flour chapathis, ragi preparations
- Whole gram pulses- sundal preparations
- Fruits with edible skin and seed (guava, grapes, banana, pomegranate.)
- Vegetables- green leafy vegetables

The fibre present in these foods traps the sugars and only gradually releases it into the blood stream, thereby preventing a sudden rise of sugars in the blood stream. Thus it is important to include at least one serving (100gm) of fibre rich food with each meal.

How much carbohydrates should be eaten?

The amount of carbohydrates that can be eaten depends on the individual's nutritional status (underweight/ normal weight /overweight /obese), age of the person, gender, activity levels, medication, presence of other co-morbidities. The recommendation is that it should constitute 60 - 65% of the total calories

(ICMR 2010). The dietician will help you decide on the carbohydrates you need and recommend the cereal portion (major source of carbohydrate) for each meal.

What foods can be taken in unrestricted amounts?

Foods that do not cause a rise in blood sugar like black coffee, black tea, unsweetened lime juice, clear soups, salads, greens, sugar free drinks, flavoured water. These foods are low in carbohydrates and calories and can be taken in unlimited amounts.

How often should a person with Diabetes eat?

A diabetes patient should eat at regular times. They should follow a 3 meal pattern with snacks in between. If on insulin medication, make sure you take your meals and insulin injections at the correct time. Insulin continues to work in the body for varying periods of time and hence to prevent a low blood sugar situation (hypoglycaemia) from happening, long gaps between meals should be avoided. You should never miss your breakfast. The late night snack you take before going to sleep is very important as it helps to prevent a hypoglycaemic attack at night.

What to do during an episode of hypoglycaemia?

Hypoglycaemia occurs when your blood sugar falls below 70mg%. This can occur if you delayed your meals, in case of excessive physical activity or took the insulin injection but delayed your food. You may experience sweating/dizziness/loss of consciousness/shivering during a hypo attack. Please check your blood sugar and if it is below 70mg%, take 15gm (3 teaspoon) of glucose. Wait for 10 minutes and check blood sugars again. If it continues to be low, take another 15gm of glucose. After levels have reached acceptable levels (80mg% and above) take a meal or snack within 30 minutes. Always carry glucose with you wherever you go.

What are the foods that are to be avoided? Why?

Sugary foods like cakes, pastries, carbonated drinks, Indian sweets (laddoos, jilabis, etc.), ice-creams, lollipops, chocolates, sweets, jaggery, and honey are high in simple sugars and are easily absorbed by the body resulting in a sudden raise in blood sugars. These are best avoided.

What is a balanced diet?

A diet that contains adequate carbohydrates, proteins, fats, vitamins & minerals and fibre is a balanced diet as it meets our daily requirement. A picture of a balanced lunch/dinner is given below. A diabetes diet is a balanced diet.

SNACKS

Are snacks important? When and why should I take snacks in between meals?

Snacks are very important to prevent hypoglycaemia in patients. They should be taken three hours after meals. This prevents the blood sugars from going too low, that is below 70mg%.

What are the snacks that I should take between meals?

Any of the foods below can be taken as a snack.



½ cup pulses



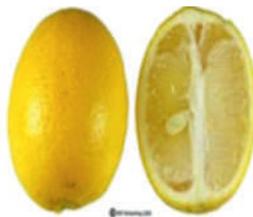
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200ml
milk



Veg Salad



Any ONE seasonal fruit

FOOD EXCHANGES LIST

The dietician will give you a food exchange list. This list contains different foods of varying quantities but with the approximately same calories and nutrient content. The diabetes person can exchange for different foods within the same group. The food exchange list is given below.

Cereal exchange contains approximately 85 calories, 1-2gm proteins, 15-20 gm carbohydrates, nil fat



Milk Exchange contains 65 calories, 3.2 gm proteins, 4 gm fat, 4gm carbohydrates



Cow's milk 100ml



Buffalos milk 50ml



Curds 100ml

Pulse exchange contains approximately (1/2 cup =25gm), Calories=85 cal, Proteins=4-6gms, Carbohydrates=12-15gm



Meat/Fish exchange contains approximately 85 calories, 6-9gms fats, 6-18gm proteins, nil carbohydrates.



Fruit exchange contains approximately 40 calories, 10gm carbohydrates, nil proteins & fats

FOODS TO BE AVOIDED:

- Sugar, honey, glucose, jam, jaggery, jelly, sweets, cakes etc...
- Tender coconut water, coconut, carbonated drinks, Alcohol
- Dried fruits like raisins(Raisins)
- Mango, jack fruit, Custard Apple (seethaphal) and sapota
- Horlicks, bournvita, boost, chocolates

FOODS TO BE INCLUDED :

White pumpkin, beans, bittergourd, brinjal, broadbeans, broccoli, cabbage, cucumber, cauliflower, chow-chow

Clusterbeans, brussels prouts, asparagus, karamani, drumstick, capsicum

Turnip, green leafy vegetables, kovaikai, knolkhol, ladies finger,

Rawpappaya, Plantain flower, plantainstem, peas, bottlegourd, ridgegourd, tomato (raw and ripe),tinda, raddish, parsley, green lettuce, onion stalks (green onion).

To be taken in limited amount :

Carrot, beetroot, doublebeans, yam, colacasia, potato, sweet potato

Non-veg :

- Limit the quantity of non - veg items
- Chicken - 75gm
- Egg - medium size
- Fish - 75gm
- Paneer- 35gm
- Meat - 50gm (Monthly once)
- Pork, Beef- 50gm (Monthly once)

Fat : oils recommended :

- Groundnut oil, gingelly oil, Ricebran oil, mustard oil, Sunflower oil and olive oil can be used.
- Ghee, butter, dalda, coconut oil, palm oil must be avoided, these are rich in saturated fat.

Healthy food plate :

Your plate must be filled with 50% of vegetable to get Fibre, Vitamins and Minerals, 1/4 plate (25%) of any one dhal, chicken, fish, egg, meat to meet the protein needs and 1/4 (25%) should be from whole grains like whole wheat, ragi, bajra, samai.

How to choose a healthy plate :

- Fiber rich brown rice, whole wheat, ragi, bajra and millets
- Choose low calorie vegetables and green leafy vegetables.
- Choose good fat and limit saturated and trans fat in your daily diet
- Avoid salty foods like pappad, pickles and dry fish.

Oil _____ teaspoon / day

Salt _____ teaspoon / day

Fruits

1 small Apple

4 whole apricots (fresh)

1 small banana (4oz) or 1/2 medium

2 med figs fresh

17 grapes

6 jambu

1 kiwi

3/4 cup mandarin oranges

guava

1 small orange

1/2 cup papaya cubes

1/2 med passion fruit

1/2 C fresh pineapple

2 small plums

1/2 cup watermelon cubes

pomegranate

Snack foods:

1/2 cup sprouted pulses

1/2 cup cooked vegetables

(asparagus, green beans, bean sprouts,

beets, broccoli, cabbage, carrots,

cauliflower, eggplant, okra, onions,

spinach, tomato, turnips, and 1 cup

raw vegetable

MEAL PATTERN FOR PEOPLE WITH DIABETES

6.00 am : Milk 100ml

Breakfast - 8 a.m.

Idli / dosa / Roti / Wheat Sooji upma / millets

Vegetable 1 cup + Dhal / Sambhar - 1 Serving

Midmorning Snacks : 10.30 - 11.00 a.m.

Butter Milk 200 ml / Fruits / Vegetable Soup 200ml

Lunch : 12.30 - 1 pm

Rice

Veg 1 cup

Pulses/ Egg/fish/chicken - 1 serving / Curds

Tea Time - 4 pm

Milk 100ml / Sprouts 1/2 cup (25gm) / Almonds 10 - 12 Nos (15 gm)

groundnuts 30 Nos (15gm) / Roasted (or)

Boiled Chola 1/2 cup (25gm)

Dinner : 7.30 - 8.00 pm

Roti / Wheat Dosa / Wheat Sooji Upma / millets

Vegetable 1 cup

Pulses/ Egg/Fish/Chicken - 1 serving / paneer

10 pm - Bed Time snack : Milk 200ml / Boiled (or)

Roasted Chola (25gm)

/ Boiled Egg White - 2

Tips for healthy living

- ✓ Eat at regular times
- ✓ Eat a balanced meal
- ✓ Avoid long gaps between meals
- ✓ Follow a 3 meal + 3 snacks eating pattern
- ✓ Include fibre rich foods in all the meals
- ✓ Take 4-5 serving of vegetables daily
- ✓ Drink adequate quantity of water (8-12 glasses of water)
- ✓ Exercise for 30 minutes daily.
- ✓ 1 cup = 200gm
- ✓ 1 Serving = 100gm (Vegetables & Fruit)
- ✓ 1 Serving Pulses & Lentils = 25 gm
(Dhal, Sambar, Sundal / Chola)

Dietician Sign

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