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Carbohydrates

Carbohydrates are one of the main dietary components. This category of foods includes sugars, starches, and fiber.

Function

The primary function of carbohydrates is to provide energy for the body, especially the brain and the nervous system. An enzyme called amylase helps break down carbohydrates into glucose (blood sugar), which is used for energy by the body.

Food Sources

Carbohydrates are classified as simple or complex. The classification depends on the chemical structure of the food, and how quickly the sugar is digested and absorbed. Simple carbohydrates have one (single) or two (double) sugars. Complex carbohydrates have three or more sugars.

Examples of single sugars from foods include:

- Fructose (found in fruits)
- Galactose (found in milk products)

Double sugars include:

- Lactose (found in dairy)
- Maltose (found in certain vegetables and in beer)
- Sucrose (table sugar)

Honey is also a double sugar. But unlike table sugar, it contains a small amount of vitamins and minerals. (Note: Honey should not be given to children younger than 1 year old.)

Complex carbohydrates, often referred to as "starchy" foods, include:

- Legumes
- Starchy vegetables
- Whole-grain breads and cereals

Simple carbohydrates that contain vitamins and minerals occur naturally in:

- Fruits
- Milk and milk products
- Vegetables

Simple carbohydrates are also found in processed and refined sugars such as:

- Candy
- Regular (nondiet) carbonated beverages, such as soda
- Syrups
- Table sugar

Refined sugars provide calories, but lack vitamins, minerals, and fiber. Such simple sugars are often called "empty calories" and can lead to weight gain.

Also, many refined foods, such as white flour, sugar, and white rice, lack B vitamins and other important nutrients unless they are marked "enriched." It is healthiest to get carbohydrates, vitamins, and other nutrients in as natural a form as possible -- for example, from fruit instead of table sugar.

Side Effects

- Getting too many carbohydrates can lead to an increase in total calories, causing obesity.
- Not getting enough carbohydrates can cause a lack of calories (malnutrition), or excessive intake of fats to make up the calories.

Recommendations

Most people should get between 40% and 60% of total calories from carbohydrates, preferably from complex carbohydrates (starches) and natural sugars. Complex carbohydrates provide calories, vitamins, minerals, and fiber.

Foods that are high in processed, refined simple sugars provide calories, but very little nutrition. It is wise to limit these sugars.

To increase complex carbohydrates and healthy nutrients:

- Eat more fruits and vegetables.
- Eat more whole-grain rice, breads, and cereals.
- Eat more legumes (beans, lentils, and dried peas).

Here are recommended serving sizes for foods high in carbohydrates:

- Vegetables: 1 cup of raw vegetables, or 1/2 cup cooked vegetables, or 3/4 cup of vegetable juice
- Fruits: 1 medium-size fruit (such as 1 medium apple or 1 medium orange), 1/2 cup of a canned or chopped fruit, or 3/4 cup of fruit juice
- Breads and cereals: 1 slice of bread; 1 ounce or 2/3 cup of ready-to-eat cereal; 1/2 cup of cooked rice, pasta, or cereal; 1/2 cup of cooked dry beans, lentils, or dried peas
- Dairy: 1 cup of skim or low-fat milk

For information about how many servings are recommended, see the article on the food guide plate.

Here is a sample 2,000 calorie menu, of which 50 - 60% of the total calories are from carbohydrates:

- Breakfast
 - Cold cereal
 - 1 cup shredded wheat cereal
 - 1 tbsp raisins
 - 1 cup fat-free milk
 - 1 small banana
 - 1 slice whole-wheat toast
 - 1 tsp soft margarine
 - 1 tsp jelly
- Lunch
 - Smoked turkey sandwich
 - 2 ounces whole-wheat pita bread
 - 1/4 cup romaine lettuce
 - 2 slices tomato
 - 3 ounces sliced smoked turkey breast
 - 1 tbsp mayo-type salad dressing
 - 1 tsp yellow mustard

- 1/2 cup apple slices
- 1 cup tomato juice
- Dinner
 - Grilled top loin steak
 - 5 ounces grilled top loin steak
 - 3/4 cup mashed potatoes
 - 2 tsp soft margarine
 - 1/2 cup steamed carrots
 - 1 tbsp honey
 - 2 ounces whole-wheat dinner roll
 - 1 tsp soft margarine
 - 1 cup fat-free milk
- Snacks
 - 1 cup low-fat fruit yogurt

Alternative Names

Starches; Simple sugars; Sugars; Complex carbohydrates; Diet - carbohydrates; Simple carbohydrates

References

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