INTRODUCTION

- Nutrition is best defined as the composition and quantity of food intake and utilization of the food by living organisms
- Study of human nutrition can be divided in to three areas i.e under nutrition, over nutrition and ideal nutrition
- Various dietary components required for optimal nutrition are carbohhydrates,lipids ,proteins,vitamins and minerals

Importance of Carbohydrates

- The dietary carbohydrates provide a major fraction of the body's energy needs
- Ideally carbohydrates may provide about 60-65% of the total calories
- The carbohydrates in diet may be available or unavailable
- The available carbohydrates can be metabolized by the body to give energy e.g. starch
- The unavailable carbohydrates can not be assimilated and constitute only the dietary fiber.

TABLE 31.5: Sources of carbohydrates.

Carbohydrate	*Source*	*Average daily intake*	*Relative sweetness*
Sucrose	Cane sugar	50–100 g	100
Lactose	Milk	10–15 g	30
Maltose	Malt	Traces	
Fructose	Fruits, honey	2.5 g	170
Glucose	Fruits, honey	2–5 g	50
Starch	Cereals, pulses and tubers	200–300 g	0
Glycogen	Meat	Small quantity	0
Dextrins	Along with starch	Traces	0

TABLE 31.6: Carbohydrates in common foods.

1. Cane sugar 100%	2. Cassava (Tapioca) 85%
3. Rice 80%	4. Honey 80%
5. Wheat 70–80%	6. Cakes 55–65%
7. Bread 50–60%	8. Potatoes 25%

Dietary Fiber

- The unavailable or indigestible carbohydrates in the diet is called dietary fibre
- Fibres are also known as roughage or bulk
- Functional fiber are isolated nondigestible carbohydrates that have beneficial physiological effects in humans
- Dietary fibers have different chemical and physical properties
- They have been mainly classified in to two types

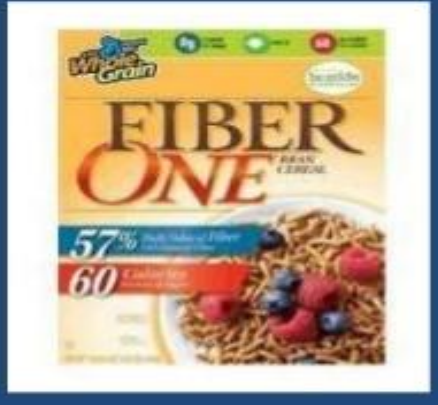
  1.Soluble

  2. Insoluble

TABLE 27.3 Major Types of Fiber and Their Properties

Type of Fiber	Major Source in Diet	Chemical Properties	Physiological Effects
Cellulose	Unrefined cereals Bran Whole wheat	Nondigestible Water-insoluble Absorbs water	Increases stool bulk Decreases intestinal transit time Decreases intracolonic pressure
Hemicellulose	Unrefined cereals Some fruits and vegetables Whole wheat	Partially digestible Usually water-insoluble Absorbs water	Increases stool bulk Decreases intestinal transit time Decreases intracolonic pressure
Lignin	Woody parts of vegetables	Nondigestible Water-insoluble Absorbs organic substances	Increases stool bulk Bind cholesterol Bind carcinogens
Pectin	Fruits	Digestible Water-soluble Mucilaginous	Decreases rate of gastric emptying Decreases rate of sugar uptake Decreases serum cholesterol
Gums	Dried beans Oats	Digestible Water-soluble Mucilaginous	Decreases rate of gastric emptying Decreases rate of sugar uptake Decreases serum cholesterol

High fiber cereals



Beans

Importance of dietary fibers

- Cellulose , hemicellulose and lignin absorb water and increase stool bulk and thus decreases intestinal transit time and are associated with the effect of fiber on regularity
- They decrease intracolonic pressure and appear to play a beneficial role with respect to diverticular diseases
- By diluting out potential carcinogens and speeding their transit through the colon, they may also play a role in reducing the risk of colon cancer

- Mucilaginous fibres such as pectin and gums,tend to form viscous gels in stomach and small intestine and slow the rate of gastric emptying,thus slowing the rate of absorption of cholesterol and carbohydrates

- Pectin and gums bind bile acids and increases their excretion and thus lowering the cholesterol level in blood

- Fiber rich diet being indigestable giving a feeling of fullness without consumption of excess calories and thus prevent us from obesity and its associated complications