Outline

Structure & function

Digestion

Lactose intolerance

Fiber

Not enough CHO

CHO & exercise

Functions of carbohydrate

To supply energy

Essential for brain metabolism

Very important fuel for many sports

Types of dietary carbohydrate

Carbohydrates

Carbon, hydrogen and oxygen

Simple carbohydrates

Monosaccharides

Glucose

Fructose

Galactose

Disaccharides

Maltose = glucose + \_\_\_\_\_\_\_\_

Lactose = glucose + \_\_\_\_\_\_\_\_

Sucrose = glucose + \_\_\_\_\_\_\_\_

Types of carbohydrate continued

Complex carbohydrates:

Polysaccharide

Starch

Fiber

How much carbohydrate do we need?

Acceptable Macronutrient Distribution Range (AMDR)

45-65% of calories

Minimum of 130 g/d

Exercisers < 450 g/d

Adequate Intake (AI) for total fiber

21-38 grams

Lactose Intolerance

Individuals produce insufficient **lactase**

Gastrointestinal symptoms

Small portions may be tolerated w/o symptoms

Need to find alternative source of calcium & vit D

Fermented dairy products (yogurt)

Dark, green leafy vegetables

Calcium fortified products (orange juice)

Calcium supplements

Proposed health benefits of fiber

**Water-insoluble** fiber ↑ fecal bulk

Rapid movement through the digestive tract

Observational studies link high fiber with low colon cancer

Cereals especially those containing wheat bran, nuts, some fruits and vegetables

**Water-soluble** fiber ↓ cholesterol

May help reduce risk of heart disease

Oats, barley, legumes, psyllium, seeds, apples, blueberries, citrus, okra, broccoli

Health-promoting carbohydrates

What is the metabolic fate of CHO?

Most dietary carbohydrates are either glucose or converted to glucose by the liver

Normal blood glucose = 80-100 mg/dL

May be used for energy

May be converted to and stored as glycogen in liver or muscle

May be converted to and stored as fat in adipose

Can the body make CHO from protein or fat?

The process of **gluconeogenesis**

From protein

Not from fat

Carbohydrates & Exercise

Carbohydrate contributes about 40% of energy needs at rest

Carbohydrates & Exercise

Carbohydrate is predominant energy source during exercise

Timing of CHO consumption

Before

During

After