



Carbohydrates



What are Carbohydrates?



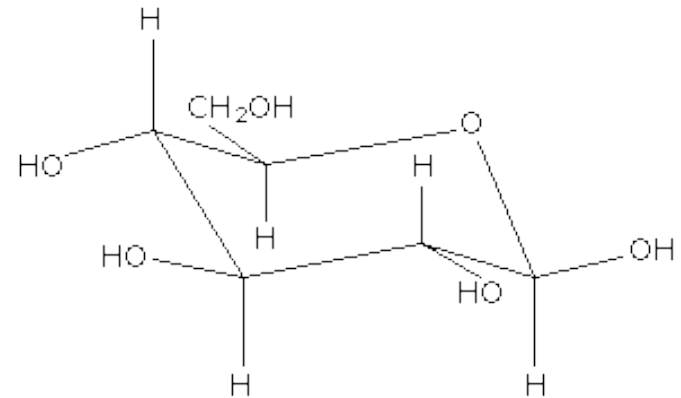
Type of Carbohydrates

- Simple Carbohydrates
- Complex Carbohydrates
- Fiber



General Composition

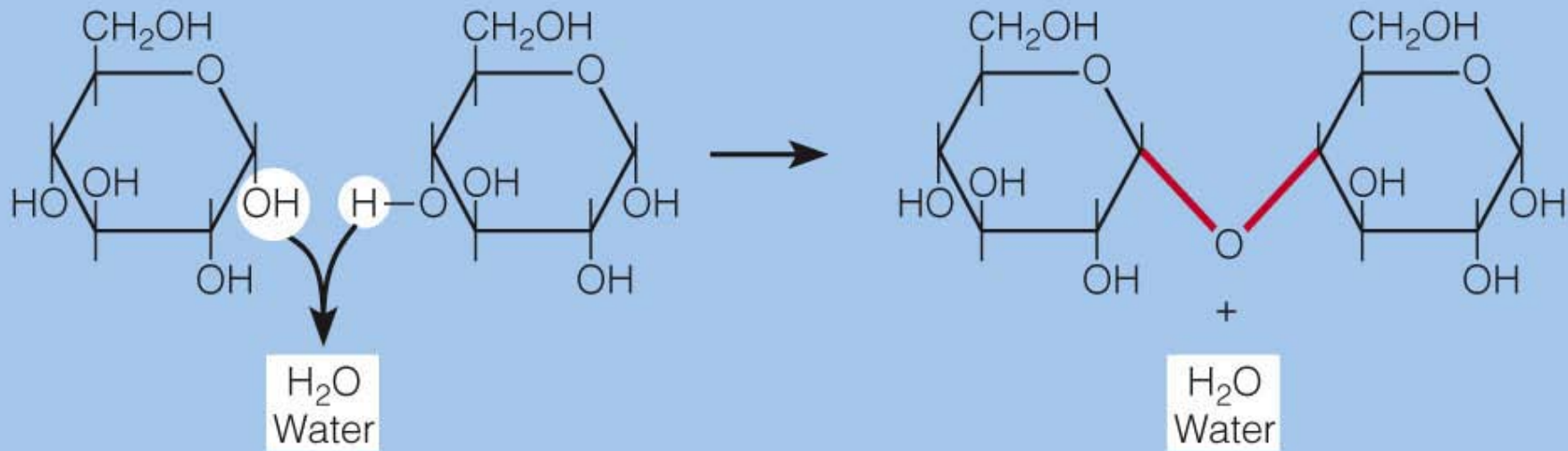
- Organic compound
- Contains carbon, hydrogen, oxygen
- Simple carbohydrates: 1 or 2 sugars
- Complex carbs contain > 2 sugars





Simple Carbohydrates

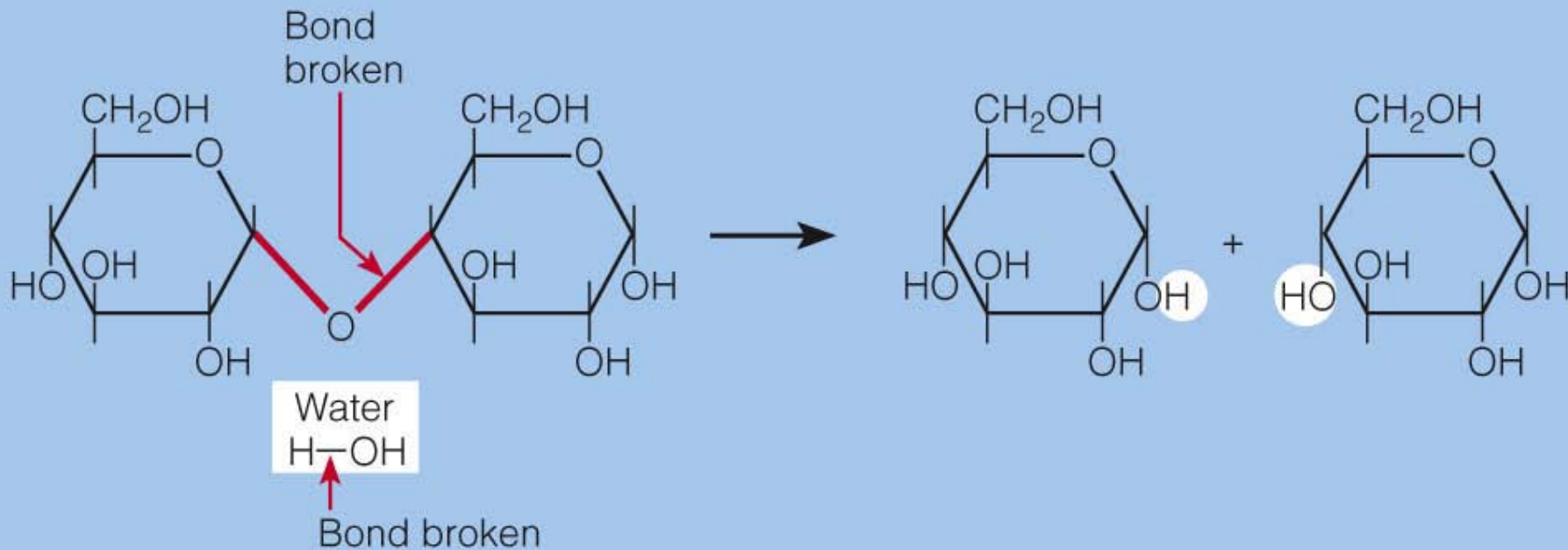
- Monosaccharides
- Disaccharides
- Chemical Reactions make or break carbs
 - Condensation:
 - Hydrolysis:



Glucose + glucose



Maltose



Maltose



Glucose + glucose

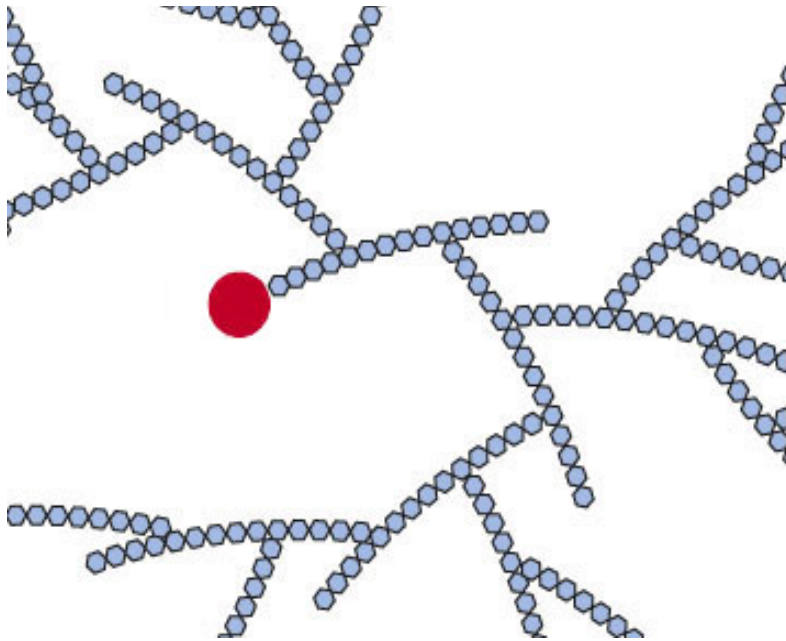


Complex Carbohydrates

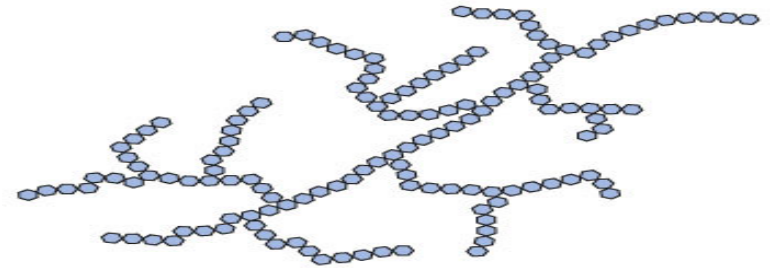
- Polysaccharides:
- Starch:
- Glycogen:



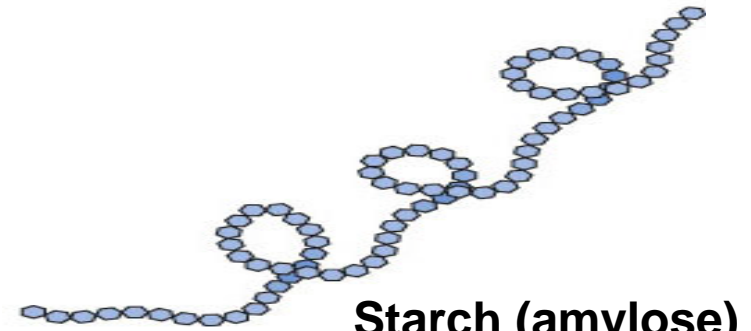
Molecular Structure of Complex Carbs



Glycogen



Starch (amylopectin)



Starch (amylose)



Fiber

- Definition:
- Purpose:
- Types:
- Recommended intake:
- Deficiency concerns:



Water Soluble Fiber

- Definition
- Types
- Food sources:
- Purpose:



Water Insoluble Fiber

- Definition
- Types
- Food Sources:
- Purpose:



Carbohydrate Functions

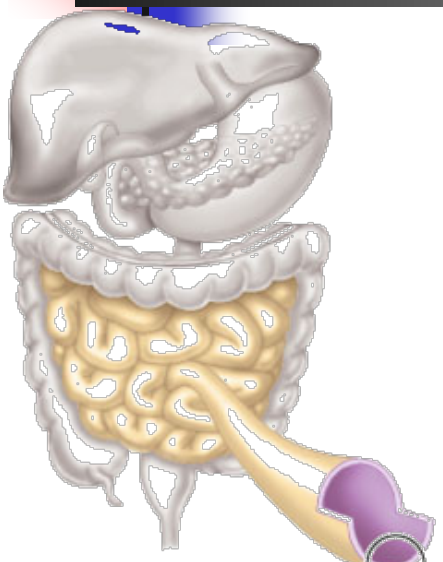
- Provide energy to the body
- Impart sweetness to foods
- Protein Sparing
- Prevent ketosis



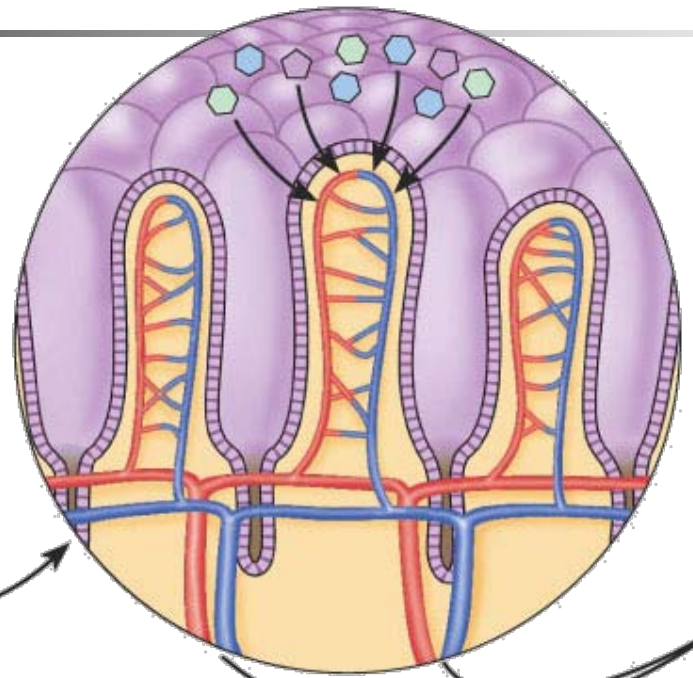
Carbohydrate Digestion and Absorption

- Mouth
- Stomach
- Small Intestine
- Large Intestine

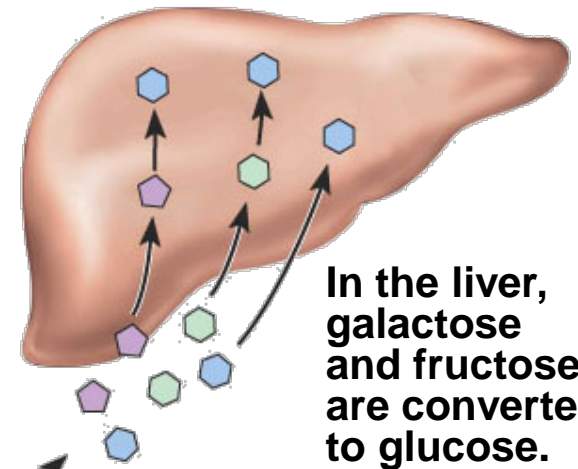
Monosaccharides, the end products of carbohydrate digestion, enter the capillaries of the intestinal villi.






Small intestine



Monosaccharides travel to the liver via the portal vein.



In the liver, galactose and fructose are converted to glucose.

Key:	
	Glucose
	Fructose
	Galactose



Digestion, Absorption, and Metabolism Problems

- Lactose Intolerance
- Diabetes
- Hypoglycemia
- Constipation
- Diverticulosis



Health Benefits of Carbohydrates

- Weight Control
- Heart Disease
- Cancer
- Diabetes
- Gastrointestinal Health



Carbohydrate Myths

- Hyperactivity
- Dental Caries
- Weight Gain



Selecting Healthy Carbohydrates

- Starches

- Whole Grain



Selecting Healthy Carbohydrates

- Fruit
- Milk
- Sweets/Added Sugars



How Much Carbohydrate Should I Eat?

- RDA
- Recommended amounts vary
- Goal
- Added sugar recommendations



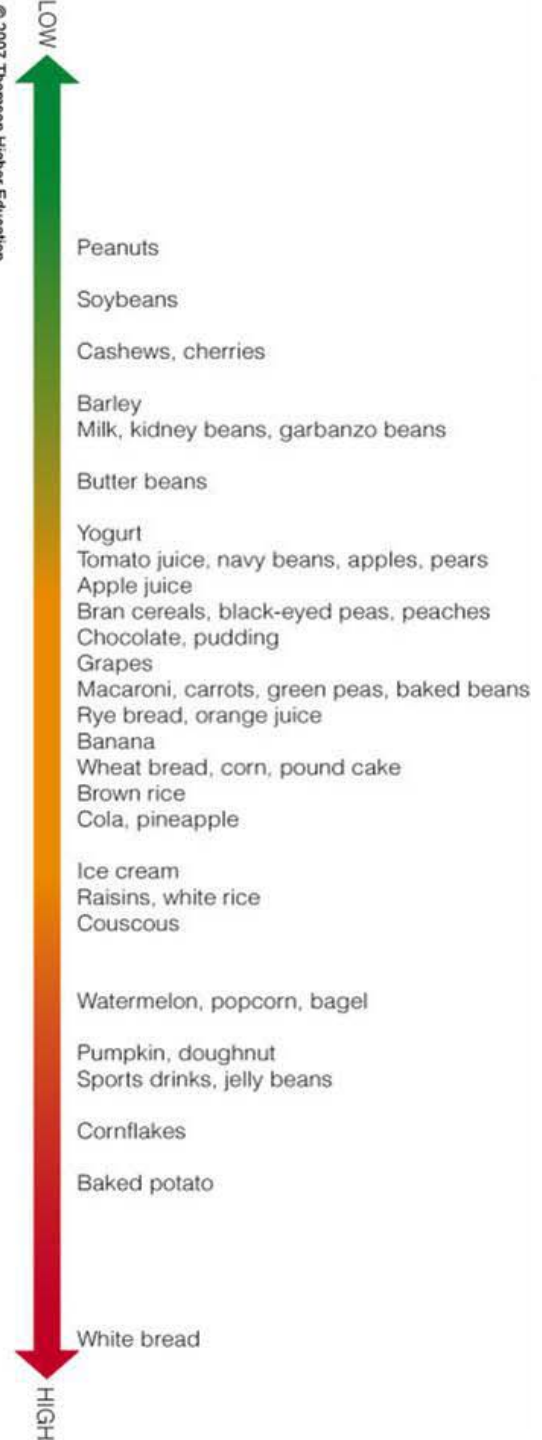
Glycemic Index

Definition

Classification of Foods

Controversial

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Factors Affecting Glycemic Index

- Cooking Method
- Processing Method
- Type of Starch
- Fiber
- Sugar
- Fat
- Acidity



Glycemic Index Controversies

- Variability
- Typical food consumption not recognized
- Fat Content
- Mixed meal
- Methodology
- Reference Foods
- Exclusion of foods



Carbohydrate (sugar) substitutes

- Purpose
- Nutritive sweeteners
- Non-nutritive sweetener
- Sugar Alcohols