

## Chapter 02: Carbohydrates

### Nix: Williams' Basic Nutrition and Diet Therapy, 15th Edition

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#### MULTIPLE CHOICE

1. Carbohydrates are nutrients that are composed of the elements carbon, hydrogen, and
  - a. oxygen.
  - b. nitrogen.
  - c. water.
  - d. glucose.

ANS: A

The chemical nature of carbohydrates is carbon, hydrogen, and oxygen.

DIF: Cognitive Level: Knowledge REF: p. 21 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

2. Carbohydrates play a major role in nutrition because they
  - a. provide a long-term energy store.
  - b. are digested in the stomach.
  - c. help regulate body functions.
  - d. provide the body's major source of energy.

ANS: D

Carbohydrates are the major source of energy for the body, comprising approximately 50% of total caloric intake.

DIF: Cognitive Level: Application REF: p. 20 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

3. Carbohydrates are stored as glycogen in the
  - a. central nervous system and muscles.
  - b. heart and liver.
  - c. small intestine.
  - d. liver and muscles.

ANS: D

Carbohydrates are stored as glycogen in the liver and muscles.

DIF: Cognitive Level: Knowledge REF: p. 23 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

4. An example of a food that contains a fructose sugar is
  - a. milk.
  - b. honey.
  - c. molasses.
  - d. corn.

ANS: B

Fructose is a monosaccharide and is the sweetest of the simple sugars. It is primarily found in fruits and honey.

DIF: Cognitive Level: Knowledge REF: p. 21  
TOP: Nursing Process: Implementation  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

5. Examples of the simple carbohydrates include
- glucose and galactose.
  - sucrose and starch.
  - lactose and lignin.
  - fructose and glycogen.

ANS: A

Monosaccharides and disaccharides are the simple sugar units used to build complex carbohydrates. The monosaccharides are glucose, galactose, and fructose.

DIF: Cognitive Level: Application REF: pp. 22-23  
TOP: Nursing Process: Implementation  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

6. The sugar to which all other sugars are converted and the one that circulates in the blood to provide major fuel for the body's cells is
- sucrose.
  - fructose.
  - glucose.
  - maltose.

ANS: C

Glucose is a monosaccharide that is the basic, single sugar in the body's metabolism. Glucose is the form of sugar circulating in the blood and is the primary fuel for the cells.

DIF: Cognitive Level: Knowledge REF: p. 21 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

7. Carbohydrates are quick energy foods because
- they do not take long to prepare and are readily available.
  - the human body can rapidly break them down to yield energy.
  - they are abundant in fast foods and can be readily absorbed.
  - they can yield more energy than other nutrients.

ANS: B

Carbohydrates are considered quick energy foods because they can readily be metabolized in the body to yield glucose, the main fuel source for the body.

DIF: Cognitive Level: Comprehension REF: p. 21 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

8. The carbohydrate form in which glucose is stored in the body is
- starch.
  - polysaccharide.
  - glycogen.
  - fructose.

ANS: C

Glucose is stored in the body as glycogen.

DIF: Cognitive Level: Knowledge REF: p. 23 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

9. Of the following, the best sources of dietary fiber are
- fruit and fruit juice.
  - rice and crackers.
  - iceberg lettuce and tomato juice.
  - lentils and corn.

ANS: D

Dietary fiber is found in unrefined and whole plant foods. Of the choices listed, lentils and corn provide the highest amount of dietary fiber.

DIF: Cognitive Level: Application REF: p. 23 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

10. Types of dietary fiber include
- lactose, galactose, and maltose.
  - polysaccharides and polyols.
  - starch, ptyalin, and glucose
  - cellulose, lignin, and noncellulose.

ANS: D

Dietary fiber is found in plant foods. Plants contain several types of dietary fiber, including cellulose, lignin, and noncellulose polysaccharides.

DIF: Cognitive Level: Knowledge REF: pp. 23-24 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

11. The recommended daily intake of dietary fiber for an adult woman is \_\_\_\_\_ g/day.
- 15
  - 21
  - 25
  - 30

ANS: C

The recommended intake of fiber for men and women age 50 years and younger is 38 g/day and 25 g/day, respectively.

DIF: Cognitive Level: Knowledge REF: p. 16 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

12. A health professional is determining the caloric intake for a patient. Her caloric intake from fiber would be
- 3.4 kcal/g.
  - 0 kcal/g.
  - 4 kcal/g.
  - 9 kcal/g.

ANS: B

Human beings lack the necessary enzymes to digest dietary fiber, and so, unlike other carbohydrates, dietary fiber does not provide energy.

DIF: Cognitive Level: Application REF: p. 23  
TOP: Nursing Process: Assessment  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

13. Wavelike contractions of the muscle fibers of the stomach and intestinal walls are called
- segmentation.
  - peristalsis.
  - metabolism.
  - digestion.

ANS: B

The mechanical digestive process in the stomach entailing wavelike contractions of the muscle fibers of the stomach wall that mix food particles with gastric secretions is called *peristalsis*.

DIF: Cognitive Level: Knowledge REF: p. 16 (Table 2-2)  
TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

14. A basket of fruit contains ripe grapes, apples, and oranges as well as pears and peaches that are not quite ripe. The fruits with the highest amount of simple sugar include the
- pears and apples.
  - peaches and oranges.
  - grapes and apples.
  - peaches and pears.

ANS: C

Fructose is a simple sugar; ripe fruit contains more fructose than less-ripe fruit.

DIF: Cognitive Level: Application REF: p. 21  
TOP: Nursing Process: Assessment  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

15. An apple contains a type of soluble dietary fiber called
- lignin.
  - starch.
  - cellulose.
  - pectin.

ANS: D

Pectin is a water-soluble fiber found in many fruits. Cellulose and lignin are insoluble fibers. Starch is another polysaccharide found in grains, legumes, and other vegetables and in small amounts in fruit. Starch does not necessarily contain dietary fiber.

DIF: Cognitive Level: Application REF: pp. 23-24 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

16. Of the following, the food with the lowest carbohydrate content (as a percentage of weight) would be

- a. orange juice.
- b. raisins.
- c. whole milk.
- d. dried beans.

ANS: C

Milk contains the least carbohydrate content (as a percentage of weight); it contains lactose, but the amount is diluted by all the liquid in the milk. Carbohydrates are more concentrated in dried fruits, juices, and starchy vegetables.

DIF: Cognitive Level: Analysis REF: p. 22 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

17. Digestion of the starch component of a peanut butter sandwich begins in the
- a. mouth.
  - b. stomach.
  - c. small intestine.
  - d. liver.

ANS: A

The digestion of carbohydrate-rich foods such as starches and sugars begins in the mouth, where the enzyme ptyalin begins to break the starch down into smaller particles.

DIF: Cognitive Level: Knowledge REF: p. 16 (Table 2-2)  
TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

18. A negative effect of sugar alcohols is that they
- a. contain more kilocalories than sugar.
  - b. can cause intoxication.
  - c. promote bacterial disease in the colon.
  - d. may cause diarrhea.

ANS: D

Excessive amounts of sugar alcohols in food products can cause diarrhea because of the slow digestion of the product.

DIF: Cognitive Level: Comprehension REF: p. 20 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

19. Once monosaccharides are absorbed into the intestinal bloodstream, they are transported to the
- a. cells.
  - b. liver.
  - c. heart.
  - d. brain.

ANS: B

The monosaccharides glucose, galactose, and fructose are absorbed directly into the portal blood circulation, which carries them directly to the liver.

DIF: Cognitive Level: Knowledge REF: pp. 18-19 (Table 2-3)

TOP: Nursing Process: Planning

MSC: NCLEX: Physiological Integrity: Physiological Adaptation

20. A client has a goal of increasing fiber intake to 30 grams per day. Current intake reveals the following information: Breakfast intake is 3/4 cup sugary corn popped cereal, 1 cup skim milk, 1 slice white toast, and 1/2 cup orange juice. Lunch includes 2 ounces sliced turkey, 1 slice wheat bread, 1 tablespoon mayonnaise, 2 chocolate chip cookies, and 1 cup water. Dinner includes 4 ounces beef, 1/2 cup green beans, 3/4 cup instant mashed potatoes with butter, 1 biscuit, and 1 cup skim milk. As the nutrition expert counseling this patient, one appropriate recommendation might be to
- encourage whole-grain breads and cereals in place of white breads and cereals.
  - double the amount of proteins such as turkey and beef and eliminate sugar intake.
  - add 2 tablespoons of omega-3 fatty-acid enriched margarine to breads and potatoes.
  - make no changes because adequate fiber intake is present.

ANS: A

The recommended daily fiber intake is 38 grams per day for men. This intake requires consistent use of whole grains, legumes, vegetables, and fruits, along with seeds and nuts. Meats and fats such as butter and margarine do not contain fiber.

DIF: Cognitive Level: Analysis

REF: pp. 18-19 (Table 2-3)

TOP: Nursing Process: Planning

MSC: NCLEX: Physiological Integrity: Physiological Adaptation | NCLEX: Health Promotion and Maintenance

21. An example of a food low in carbohydrates is
- low-fat yogurt.
  - steak.
  - beans.
  - potatoes.

ANS: B

Meats such as beef, poultry, and fish do not contain carbohydrates. Yogurt contains some carbohydrates from the milk and is often sweetened. Starchy vegetables such as beans and potatoes are high in carbohydrates.

DIF: Cognitive Level: Application

REF: pp. 22-24

TOP: Nursing Process: Implementation

MSC: NCLEX: Physiological Integrity: Physiological Adaptation | NCLEX: Health Promotion and Maintenance

22. The major site or organ in the body for metabolic processing of carbohydrates is the
- intestine.
  - heart.
  - brain.
  - liver.

ANS: D

The liver is the major site for metabolic processing of carbohydrates.

DIF: Cognitive Level: Knowledge

REF: p. 21 | pp. 23-24

TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

23. The digestion of milk yields the monosaccharides
- fructose and glucose.
  - galactose and glucose.
  - galactose and sucrose.
  - glucose and maltose.

ANS: B

The digestion of milk yields the monosaccharides galactose and glucose from the disaccharide lactose.

DIF: Cognitive Level: Knowledge      REF: p. 22      TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

24. A food that contains maltose is
- milk.
  - fruit.
  - molasses.
  - table sugar.

ANS: C

Maltose is found in molasses.

DIF: Cognitive Level: Application      REF: p. 22  
TOP: Nursing Process: Implementation  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

25. A molecule of glycogen is composed of hundreds of units of
- galactose.
  - glucose.
  - glucose, fructose, and galactose.
  - disaccharide.

ANS: B

Glycogen is composed of glucose units.

DIF: Cognitive Level: Knowledge      REF: p. 23      TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

26. Sufficient dietary carbohydrates prevent excess formation of
- ketones.
  - ammonia.
  - amino acids.
  - water.

ANS: A

Ketones result from the rapid breakdown of fat. The breakdown of fat occurs when carbohydrate intake is inadequate. Sufficient carbohydrate intake prevents ketosis from occurring.

DIF: Cognitive Level: Knowledge      REF: p. 21      TOP: Nursing Process: Evaluation

MSC: NCLEX: Physiological Integrity: Physiological Adaptation

27. A part of the body that depends on a constant supply of carbohydrate to function properly is the
- cardiopulmonary system.
  - urinogenital system.
  - central nervous system.
  - gastrointestinal system.

ANS: C

The central nervous system requires a constant supply of glucose in the bloodstream to function properly.

DIF: Cognitive Level: Knowledge REF: p. 21 TOP: Nursing Process: Planning  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

28. The number of kilocalories from carbohydrates in a baked potato that contains 40 g carbohydrate is \_\_\_\_\_ kcal.
- 40
  - 80
  - 160
  - 360

ANS: C

Carbohydrate contains 4 kcal/g. So a potato that contains 40 g carbohydrate would provide  $40 \times 4 = 160$  kcal.

DIF: Cognitive Level: Application REF: p. 15  
TOP: Nursing Process: Assessment  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

29. A food that is a good source of fiber is
- oatmeal.
  - prune juice.
  - salmon.
  - cornstarch.

ANS: A

Plant foods contain the best sources of fiber. Oatmeal is a whole-grain cereal and is therefore high in fiber.

DIF: Cognitive Level: Application REF: pp. 18-19 (Table 2-3)  
TOP: Nursing Process: Implementation  
MSC: NCLEX: Physiological Integrity: Physiological Adaptation

30. Which of the following carbohydrates provides the fastest source of energy?
- ground beef
  - cranberry juice
  - whole-grain cereal
  - milk

ANS: B



Cranberry juice contains fructose, a single carbohydrate or monosaccharide, which requires no digestion and so is more quickly absorbed than more complex carbohydrates found in whole grains or the disaccharide lactose in milk.

DIF: Cognitive Level: Application REF: p. 22

TOP: Nursing Process: Implementation

MSC: NCLEX: Physiological Integrity: Physiological Adaptation