

Chapter 2 – Carbohydrates

Answer, K/A, page(s)

K = knowledge question; A = application question

True/False

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|---|---|--------|--|
| T | K | 34 | 1. Whenever carbohydrate is available to the body, the human brain depends exclusively on it as an energy source. |
| F | K | 36 | 2. Most food fiber is kcalorie-free. |
| T | A | 40 | 3. A client consumes 2600 kcalories per day and 50 grams of carbohydrate from concentrated sweets. According to the USDA Food Guide recommendations, the client's sugar intake is within the guidelines. |
| F | K | 39 | 4. Experts agree that moderate amounts of sugar in the diet may pose a number of major health risks. |
| F | A | 48 | 5. A client consumes 2000 kcalories per day and 200 grams of carbohydrate. This person meets the current dietary recommendations for carbohydrate intake. |
| T | A | 48, 50 | 6. Cindy consumed 2 servings of vegetables, 2 servings of fruit, 5 servings of whole grains, and 2 servings of legumes during the day. Cindy meets the DV recommendation for fiber for the day. |

Multiple Choice

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|---|---|-------|---|
| a | K | 34 | 1. The main function of carbohydrates in the body is to:
a. furnish the body with energy.
b. provide material for synthesizing cell walls.
c. synthesize fat.
d. insulate the body to prevent heat loss. |
| c | K | 34 | 2. Which of the following is a simple carbohydrate?
a. starch
b. glycogen
c. sucrose
d. some fibers |
| a | K | 34 | 3. The _____ are the basic units of all carbohydrates.
a. monosaccharides
b. disaccharides
c. polysaccharides
d. sucrose molecules |
| e | K | 34-35 | 4. Three monosaccharides important in nutrition are:
a. glucose, lactose, and fructose.
b. fructose, glucose, and sucrose.
c. maltose, fructose, and lactose.
d. galactose, sucrose, and lactose.
e. fructose, glucose, and galactose. |

- d K 34 5. The primary source of energy for the brain and nervous system under normal conditions is:
- sucrose.
 - amino acids.
 - fructose.
 - glucose.
 - fatty acids.
- b K 35 6. The hormone that moves glucose from the blood into the cells is:
- glucagon.
 - insulin.
 - testosterone.
 - sucrose.
- d K 35 7. Which of the following does not come exclusively from plants?
- glucose
 - maltose
 - fructose
 - galactose
- a K 35 8. Fructose is:
- the sweetest of the sugars.
 - known as milk sugar.
 - abundant in whole grains.
 - also known as dextrose.
- d K 35 9. Fructose occurs naturally in:
- bread.
 - milk.
 - meats.
 - fruits.
- d K 35 10. Which monosaccharide is found most often in nature as a part of a disaccharide?
- glucose
 - fructose
 - maltase
 - galactose
- c K 35 11. Which of the following compounds is a disaccharide?
- glucose
 - fructose
 - lactose
 - galactose
- b K 35 12. All of the following terms are used to describe sucrose except:
- white sugar.
 - milk sugar.
 - table sugar.
 - cane sugar.
- b K 35 13. The most familiar source of sucrose is:
- bread.
 - table sugar.
 - milk.
 - meat.
 - fruit.

- d A 35 14. The principle carbohydrate in cakes and cookies is:
a. fructose.
b. galactose.
c. maltose.
d. sucrose.
- a K 35 15. One molecule of sucrose contains _____ molecule(s) of glucose.
a. one
b. two
c. three
d. four
- d K 35 16. Which of the following is the principal carbohydrate in milk?
a. galactose
b. fructose
c. sucrose
d. lactose
- b K 35 17. Chemically, lactose is a:
a. monosaccharide.
b. disaccharide.
c. dextrose.
d. polysaccharide.
- a K 35 18. An example of a polysaccharide is:
a. starch.
b. meat.
c. fruit.
d. protein.
- b K 35 19. Which of the following carbohydrates is a polysaccharide?
a. fructose
b. starch
c. maltose
d. lactose
- a K 36 20. The stored form of glucose in the body is called:
a. glycogen.
b. insulin.
c. fat.
d. muscle.
- d K 34, 35 21. Polysaccharides are composed of:
a. one glucose unit.
b. two glucose units.
c. three glucose units.
d. many glucose units.
- b K 36 22. Excess glucose in the blood is converted into glycogen and stored primarily in the:
a. brain and liver.
b. liver and muscles.
c. blood cells and brain.
d. pancreas and brain.

- b K 36 23. The richest sources of starch are:
- fruits.
 - grains.
 - vegetables.
 - soybeans.
- b K 36 24. Whole grains, vegetables, legumes, and fruits are rich sources of:
- sucrose.
 - dietary fiber.
 - fat.
 - glycogen.
- c K 36-37 25. Cellulose, pectin, hemicellulose, and gums are:
- artificial sweeteners.
 - sugar alcohols.
 - fibers.
 - simple carbohydrates.
- d K 37 26. _____ is a fiber found in all vegetables, fruits, and legumes.
- Hemicellulose
 - Pectin
 - Mucilage
 - Cellulose
- b K 36, 37 27. Which of the following fibers is a nonpolysaccharide?
- cellulose
 - lignin
 - pectin
 - gum
- c K 37 28. All of the following fibers are used by the food industry as additives or stabilizers except:
- pectins.
 - gums.
 - lignins.
 - mucilages.
- a K 37 29. _____ escape digestion and absorption in the small intestine.
- Resistant starches
 - Polysaccharides
 - Bacteria
 - Disaccharides
- b K 37 30. Fibers are categorized by:
- the type of chemical bonds that hold them together.
 - their chemical and physical properties.
 - the number of hydrogen molecules they contain.
 - their ability to be digested by human enzymes.
- c K 38 31. The sugars in fruits, vegetables, grains, and milk are:
- usually added to these foods.
 - considered discretionary calories.
 - naturally occurring.
 - resistant to digestion.

- b K 38 32. The steady upward trend in sugar consumption among Americans can be attributed to:
- consumer demand.
 - food manufacturers.
 - better food preservation techniques.
 - improved food safety practices.
- c K 38 33. The leading source of added sugar in the American diet is:
- baked goods such as cookies and cakes.
 - fruit packed in heavy syrup.
 - soft drinks and other sugar-sweetened beverages.
 - chocolate bars and other candy treats.
- b K 39 34. According to the World Health Organization's recommendations, no more than _____% of daily kcalories should come from added sugars.
- 5
 - 10
 - 15
 - 20
- c K 40 35. Which of the following statements best describes the role of sugar in the development of obesity?
- Sugar consumption is a direct cause of weight gain leading to obesity.
 - The increased use of added sugars by food manufacturers is the cause of obesity.
 - Sugar contributes to obesity when it is part of excessive energy intakes.
 - There is a direct correlation between the consumption of added sugars and the rise in obesity.
- c K 39 36. Which of the following statements about excessive sugar consumption is true?
- It causes cancer.
 - It causes heart disease.
 - It causes dental caries.
 - It causes hyperactive behavior in children.
- b A 43 37. Which of the following ingredients represents a sugar alcohol?
- polydextrose
 - maltitol
 - cellulose
 - aspartame
- d A 42 38. How many kcalories are provided by 100 grams of carbohydrate?
- 100
 - 200
 - 300
 - 400
- a K 42 39. Sweeteners that yield energy are called:
- nutritive sweeteners.
 - artificial sweeteners.
 - resistant sweeteners.
 - glycemic sweeteners.

Ice Cream

A carton of ice cream contains the following list of ingredients: milkfat and nonfat milk, sorbitol, pecans, cellulose, butter, caramel color, citric acid, aspartame, carrageenan.

- b A 42-44 40. Refer to *Ice Cream*. How many alternative sweeteners are contained in this product?
- one
 - two
 - three
 - four
- a A 44 41. Refer to *Ice Cream*. How many artificial sweeteners are contained in the product?
- one
 - two
 - three
 - four
- a K 45 42. The artificial sweetener sucralose is made from:
- sucrose.
 - an amino acid.
 - aspartame.
 - maltose.
- a K 45 43. The artificial sweetener that is similar in structure to fructose is:
- tagatose.
 - neotame.
 - sucralose.
 - stevia.
- b A 37, 46 44. Which of the following foods would you recommend to someone interested in lowering his or her blood cholesterol level?
- wheat bread
 - oatmeal
 - strawberries
 - pork
- b K 46 45. Soluble fiber can help reduce blood cholesterol levels by:
- converting cholesterol into vitamin D.
 - binding cholesterol and carrying it out of the body with the feces.
 - blocking the absorption of bile.
 - preventing the production of bile.
- d K 46-47 46. Which of the following statements is not true regarding the health benefits of fiber?
- Fiber aids in weight management.
 - Fiber aids in reducing the risk of type 2 of diabetes.
 - Fiber aids in overall health of the gastrointestinal tract.
 - Fiber aids in the prevention of osteoporosis.
- a K 46 47. The _____ describes the effect a food has on blood glucose levels.
- glycemic index
 - insulin index
 - solubility factor
 - viscosity index

- b K 48 48. Soluble fibers are found in:
- celery, wheat bran, and corn.
 - kidney beans, apples, and oatmeal.
 - corn, apples, and sunflower seeds.
 - celery, soybeans, and bran flakes.
- a K 46, 48 49. Which of the following is the most effective at alleviating constipation?
- cellulose
 - pectin
 - gums
 - psyllium
- c K 48 50. Carbohydrate should contribute approximately ____% of the total daily energy intake.
- 35-40
 - 45-55
 - 45-65
 - 55-60
- a A 48 51. A 2000-kcalorie diet that provides 175 grams of carbohydrate provides:
- inadequate carbohydrate.
 - excessive carbohydrate.
 - an appropriate amount of carbohydrate.
 - inadequate fiber.
- c K 48 52. The Dietary Reference Intake for dietary fiber is approximately ____ grams per day.
- 10-15
 - 15-25
 - 25-35
 - 35-50
- b K 49-50 53. Grains, legumes, and root vegetables contain predominantly:
- simple sugars and fiber.
 - starches and fiber.
 - fat and fiber.
 - simple sugars and fat.
- b A 49-50 54. Foods richest in carbohydrates are:
- eggs, cheese, and milk.
 - rice, broccoli, and apples.
 - milk, nuts, and oils.
 - mayonnaise, butter, and salad dressing.
- c A 50-51 55. Which of the following groups contains the least carbohydrate?
- grains and starchy vegetables
 - nuts and dried fruits
 - milk and cheese
 - fruits and vegetables
- a A 49-51 56. Jeff consumed the following foods for a meal: small baked potato, $\frac{1}{2}$ cup of carrots, 1 cup skim milk, and 1 small banana. Approximately how many grams of carbohydrate did Jeff consume?
- 47
 - 57
 - 66
 - 69

- c K 39-40 57. A valid concern about excessive sugar consumption is:
- an increased risk for developing cancer.
 - its contribution to behavioral problems in children.
 - the potential for malnutrition.
 - an increased risk for developing hypertension.
- a K 39-40 58. High-fructose corn syrup is composed of:
- fructose and glucose.
 - glucose and galactose.
 - sucrose and maltitol.
 - fructose and galactose.
- a K 40 59. Which of the following is the equivalent of 1 teaspoon of white sugar?
- 1 tablespoon of catsup
 - 1 tablespoon of jelly
 - 2 oz. of a carbonated soft drink
 - 3 teaspoons of honey
- c K 44 60. Aspartame is made from:
- sucrose.
 - fructose.
 - two amino acids.
 - two monosaccharides.
- b K 49 61. The World Health Organization set an upper limit for fiber intake at _____ grams per day.
- 30
 - 40
 - 50
 - 60

Nutrition in Practice – The Glycemic Index in Nutrition Practice

- a K 55 62. The glycemic index ranks carbohydrate foods based on their effect on:
- blood glucose and insulin levels.
 - blood pressure.
 - weight.
 - blood cholesterol and triglyceride levels.
- a K 55 63. The glycemic index of a food can be measured by comparing the increase in one's blood glucose levels after consuming a carbohydrate to that caused by a reference food such as:
- white bread.
 - a banana.
 - ice cream.
 - oatmeal.
- d A 56 64. Which of the following breakfast foods has the lowest glycemic index?
- cornflakes
 - instant oatmeal
 - white bagel
 - cooked oatmeal

- d K 55-56 65. Factors that influence the GI value of a food include all of the following except the
- structure of the starch.
 - fiber content in the food.
 - manner in which the food was processed.
 - time of day the food is consumed.
- c K 55, 57 66. People with _____ may benefit from limiting their intake of high-GI foods.
- heart disease
 - arthritis
 - diabetes
 - migraine headaches
- a K 57 67. Which of the following statements most accurately reflects current recommendations about the glycemic index?
- People with type 2 diabetes may benefit from limiting high-GI foods.
 - High-GI foods such as potatoes and bread should be avoided.
 - There is ample evidence that low-GI diets should be recommended for the general population.
 - All foods with a GI greater than 70 should be avoided until further research is done.

Matching

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|---|--------|----------------------|---|
| h | 43 | 1. ADI | a. a hormone secreted by the pancreas in response to high blood glucose; promotes cellular glucose uptake. |
| b | 35 | 2. glucagon | b. a hormone that is secreted by special cells in the pancreas in response to low blood glucose concentration; elicits release of glucose from storage. |
| c | 46, 47 | 3. glycemic response | c. a measure of the extent to which a food raises the blood glucose concentration and elicits an insulin response, as compared with pure glucose. |
| g | 37 | 4. insoluble fibers | d. the more common type of diabetes in which the fat cells resist insulin. |
| a | 35 | 5. insulin | e. indigestible food components that readily dissolve in water and often impart gummy or gel-like characteristics to foods. |
| e | 37 | 6. soluble fibers | f. having a gel-like consistency. |
| d | 47 | 7. type 2 diabetes | g. the tough, fibrous structures of fruits, vegetables, and grains; indigestible food components that do not dissolve in water. |
| f | 37 | 8. viscous | h. the amount of an artificial sweetener that individuals can safely consume each day over the course of a lifetime without adverse effect. |

Essay

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| 34 | 1. Of all the possible alternatives, why is carbohydrate the preferred energy source? |
| 40-41 | 2. How would you respond to the statement that honey is more nutritious than white sugar? |
| 43-45 | 3. Compare and contrast the 6 FDA-approved artificial sweeteners. |
| 47 | 4. Describe how fiber-rich foods help with weight control. |
| 47-48 | 5. Discuss the harmful effects of excessive fiber intake. |
| 51 | 6. Given the nutrient information on food labels, how could you determine the number of grams of starch in a food product? |
| 38 | 7. Differentiate between added sugars and naturally occurring sugars. |
| 39-40 | 8. Does high-fructose corn syrup contribute to obesity more than other types of sugar? Explain your answer. |