

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Answer Key: Hack Your Metabolism: 9th Grade Bioavailability & Nutrition Quiz

How does your body prioritize nutrient absorption? Analyze the biochemical impact of micronutrients and metabolic pathways on your long-term health.

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**1. Which of the following describes the 'thermic effect of food' (TEF) and its impact on your metabolic rate?**

**Answer:** B) The energy expended by the body to digest, absorb, and process nutrients.

The thermic effect of food represents the metabolic cost of processing different macronutrients; proteins typically have the highest TEF.

**2. Fat-soluble vitamins such as A, D, E, and K are stored in the body's liver and fatty tissues, meaning they do not need to be consumed as frequently as water-soluble vitamins.**

**Answer:** A) True

Unlike water-soluble vitamins (B-complex and C) which are excreted in urine, fat-soluble vitamins are stored, which increases the risk of toxicity if consumed in extreme excess.

**3. The process of \_\_\_\_\_ refers to the degree to which a nutrient is absorbed from the digestive tract and used for various physiological functions.**

**Answer:** A) Bioavailability

Bioavailability is a crucial concept in nutrition science, explaining why the total amount of a nutrient in a food doesn't always equal what the body actually absorbs.

**4. High-density lipoprotein (HDL) is often termed 'good cholesterol' because its primary physiological role is to:**

**Answer:** C) Carry excess cholesterol from the tissues back to the liver for disposal.

HDL functions as a scavenger, removing cholesterol from the blood and arterial walls, which helps prevent atherosclerosis.

**5. Essential amino acids are those that the human body can synthesize on its own from other carbon and nitrogen sources.**

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**Answer:** B) False

Essential amino acids cannot be manufactured by the body and must be obtained through dietary sources like soy, hemp, or animal proteins.

**6. Consuming \_\_\_\_\_ carbohydrates, such as those found in lentils or oats, leads to a slower rise in blood glucose compared to simple sugars.**

**Answer:** B) Complex

Complex carbohydrates contain longer chains of sugar molecules and fiber, requiring more time for the body to break down, which provides sustained energy.

**7. Which of these is a likely consequence of a diet consistently lacking in dietary fiber?**

**Answer:** C) Altered gut microbiome and increased risk of diverticular disease.

Fiber is essential for gut motility and supporting the beneficial bacteria in the microbiome, which impacts metabolic and immune health.

**8. The \_\_\_\_\_ is a numerical scale used to indicate how quickly a carbohydrate-containing food raises blood glucose levels.**

**Answer:** C) Glycemic Index

The Glycemic Index (GI) helps individuals understand the impact of different foods on blood sugar and insulin secretion.

**9. Electrolytes like magnesium and potassium are minerals that carry an electric charge and are vital for muscle contraction and nerve signaling.**

**Answer:** A) True

Electrolytes maintain fluid balance and facilitate the transmission of electrical impulses required for heart and muscle function.

**10. When assessing a food label, why should a consumer be wary of 'Daily Value' (DV) percentages based on a 2,000-calorie diet?**

**Answer:** A) Individual caloric needs vary significantly based on age, sex, and activity level.

The 2,000-calorie benchmark is a general guideline; athletes or growing adolescents often have higher requirements, while others may need less.

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