

Vitamins and Minerals Practice Test (Sample)

Study Guide



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Questions

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- 1. Which food source provides the best absorption of iron?**
 - A. Plant sources**
 - B. Seafood**
 - C. Heme iron from meat**
 - D. Dairy products**
- 2. Which mineral is involved in the formation of thyroid hormones?**
 - A. Zinc**
 - B. Selenium**
 - C. Iodine**
 - D. Iron**
- 3. What is the primary function of Vitamin B12?**
 - A. Bone mineralization**
 - B. Energy production**
 - C. Red blood cell formation and neurological function**
 - D. Skin health**
- 4. Which of the following populations is at risk for Vitamin D deficiency?**
 - A. Only elderly individuals**
 - B. Children, vegans, and elderly individuals**
 - C. Only institutionalized individuals**
 - D. Only adults aged 35 and older**
- 5. What supplements are commonly recommended for infants?**
 - A. Vitamin A and calcium**
 - B. Vitamin C and iron**
 - C. Vitamin K, D, and iron**
 - D. Omega-3 fatty acids**

- 6. Which mineral is important for muscle contraction and heart function?**
- A. Magnesium**
 - B. Calcium**
 - C. Potassium**
 - D. Sodium**
- 7. Which mineral is an essential component of vitamin B12?**
- A. Cobalt**
 - B. Manganese**
 - C. Fluoride**
 - D. Chromium**
- 8. What are the recommended daily amounts of zinc for men and women respectively?**
- A. 10 mg and 8 mg**
 - B. 15 mg and 12 mg**
 - C. 20 mg and 15 mg**
 - D. 25 mg and 20 mg**
- 9. What are the water-soluble vitamins?**
- A. Vitamin A and D**
 - B. Vitamin C and the B-vitamins**
 - C. Vitamin E and K**
 - D. Minerals**
- 10. Which vitamin is essential for tissue building and wound healing?**
- A. B-complex vitamins**
 - B. Vitamin C**
 - C. Vitamin D**
 - D. Vitamin E**

Answers

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1. C
2. C
3. C
4. B
5. C
6. B
7. A
8. B
9. B
10. B

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Explanations

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1. Which food source provides the best absorption of iron?

- A. Plant sources
- B. Seafood
- C. Heme iron from meat**
- D. Dairy products

The best absorption of iron comes from heme iron found in meat. Heme iron, which is derived from animal sources, is more readily absorbed by the body compared to non-heme iron found in plant sources. This is due to the fact that heme iron is part of hemoglobin and myoglobin, which are proteins that efficiently release iron in the digestive tract. When examining different food sources, meat provides the form of iron that is less affected by other dietary components that can inhibit absorption, such as phytates, polyphenols, and calcium. This makes heme iron significantly more bioavailable. While seafood also contains some heme iron, red meat is often highlighted for providing the best absorption rates due to its high concentration of heme compared to other iron sources. In contrast, plant sources primarily contain non-heme iron, which is less efficiently absorbed and is often accompanied by compounds that can hinder its uptake. Dairy products, while offering calcium and other nutrients, do not provide a significant source of iron and can actually interfere with the absorption of both heme and non-heme iron when consumed in large amounts.

2. Which mineral is involved in the formation of thyroid hormones?

- A. Zinc
- B. Selenium
- C. Iodine**
- D. Iron

Iodine is essential for the formation of thyroid hormones, particularly thyroxine (T4) and triiodothyronine (T3). The thyroid gland absorbs iodine from the bloodstream and uses it in the synthesis of these hormones, which play a crucial role in regulating metabolism, growth, and development. Without sufficient iodine, the body cannot produce adequate amounts of these hormones, leading to conditions such as goiter or hypothyroidism. While zinc, selenium, and iron are important minerals for various biological functions, they do not directly participate in the synthesis of thyroid hormones like iodine does. Zinc and selenium are involved in other bodily processes, such as immune function and antioxidant defense, while iron is primarily known for its role in oxygen transport in the blood through hemoglobin. However, it is iodine that is specifically required for the production of thyroid hormones, making it the correct choice in this context.

3. What is the primary function of Vitamin B12?

- A. Bone mineralization
- B. Energy production
- C. Red blood cell formation and neurological function**
- D. Skin health

Vitamin B12, also known as cobalamin, plays a crucial role in several important physiological processes in the body. Its primary function includes the formation of red blood cells, which is essential for transporting oxygen throughout the body. Without adequate red blood cells, individuals can experience symptoms of anemia, such as fatigue and weakness. In addition to its role in red blood cell formation, Vitamin B12 is vital for maintaining neurological function. It aids in the production of myelin, a protective sheath that surrounds nerves, ensuring proper nerve transmission and function. Deficiency in Vitamin B12 can lead to various neurological issues, including memory problems and cognitive decline. Overall, Vitamin B12 is integral to both hematological health and the nervous system, making it indispensable for overall well-being.

4. Which of the following populations is at risk for Vitamin D deficiency?

- A. Only elderly individuals
- B. Children, vegans, and elderly individuals**
- C. Only institutionalized individuals
- D. Only adults aged 35 and older

Vitamin D deficiency can affect various populations due to a combination of factors including diet, sun exposure, and overall health. Children are at risk because they require adequate vitamin D for proper bone growth and development. Vegan individuals may lack sufficient vitamin D since it is primarily found in animal sources, with limited options available in a plant-based diet. Elderly individuals are also at increased risk due to factors like limited sun exposure, skin changes that reduce vitamin D synthesis, and potential dietary insufficiencies. These factors collectively contribute to making children, vegans, and elderly individuals more susceptible to vitamin D deficiency compared to other groups. Addressing vitamin D levels in these populations is important for preventing complications such as impaired bone health and increased risk of fractures.

5. What supplements are commonly recommended for infants?

- A. Vitamin A and calcium**
- B. Vitamin C and iron**
- C. Vitamin K, D, and iron**
- D. Omega-3 fatty acids**

The recommendation for vitamin K, vitamin D, and iron supplements for infants is based on critical nutritional needs during early development. Vitamin K is essential for blood clotting, and newborns typically have low stores of this vitamin at birth; therefore, a single dose is often given shortly after delivery to prevent bleeding disorders. Vitamin D is crucial for bone health as it aids in calcium absorption. Breastfed infants may not receive sufficient vitamin D from breast milk alone, so supplementation is advised to prevent rickets, a disease caused by vitamin D deficiency. Iron is vital for healthy brain development and preventing anemia. Since infants, particularly those who are exclusively breastfed, may not get enough iron from breast milk after six months, iron supplementation is often recommended to maintain adequate levels as they transition to solid foods. By focusing on these three specific supplements, the answer aligns with guidelines from pediatric health authorities, ensuring infants receive essential nutrients for their growth and development.

6. Which mineral is important for muscle contraction and heart function?

- A. Magnesium**
- B. Calcium**
- C. Potassium**
- D. Sodium**

Calcium plays a crucial role in muscle contraction and heart function. When a muscle is stimulated to contract, calcium ions are released from the sarcoplasmic reticulum within the muscle cells. This influx of calcium triggers the interaction between actin and myosin, the proteins responsible for muscle contraction. In cardiac muscle, calcium is vital for the electrical signaling that initiates the heartbeat and regulates the force of contraction of the heart muscles. The availability of calcium directly influences how effectively muscles contract, which is fundamental for both skeletal and cardiac muscles. Thus, calcium is essential for the proper functioning of both muscles and the heart. Other minerals, while important for various physiological functions, do not have the same direct role in muscle contraction and heart function as calcium does. Magnesium, for example, supports muscle function and helps with relaxation, but it is not the primary mineral responsible for initiating contraction. Potassium is critical for maintaining fluid balance and nerve function, while sodium is important for fluid balance and nerve impulses, but neither directly drives muscle contraction in the way that calcium does.

7. Which mineral is an essential component of vitamin B12?

- A. Cobalt**
- B. Manganese**
- C. Fluoride**
- D. Chromium**

Cobalt is indeed the essential component of vitamin B12. This vitamin, also known as cobalamin, contains a cobalt ion at its core, which is crucial for its biological function. Vitamin B12 plays a vital role in various bodily processes, including red blood cell formation, DNA synthesis, and maintaining the health of nerve cells. The presence of cobalt within its structure is what allows vitamin B12 to carry out these functions effectively. In addition to being an integral part of vitamin B12, cobalt is a trace mineral necessary for human nutrition, although it is needed in very small amounts. Its role in vitamin B12 highlights the close relationship between minerals and vitamins in the human diet, emphasizing the importance of obtaining sufficient levels of micronutrients for overall health. The other minerals listed do not have the same association with vitamin B12; they serve different functions within the body, highlighting the unique role that cobalt plays in relation to this particular vitamin.

8. What are the recommended daily amounts of zinc for men and women respectively?

- A. 10 mg and 8 mg**
- B. 15 mg and 12 mg**
- C. 20 mg and 15 mg**
- D. 25 mg and 20 mg**

The recommended daily amounts of zinc for men and women are indeed 11 mg and 8 mg. However, in this context, the closest values provided align with option A, which states 10 mg and 8 mg, particularly for women. It's important to note that while the exact numbers may vary based on guidelines, the values given in option A are in a reasonable range for daily intake recommendations that reflect the needs of the population. Zinc plays a vital role in various bodily functions, including immune system performance, protein synthesis, wound healing, and DNA synthesis. Adequate zinc intake is crucial for maintaining overall health, as both men and women require this essential mineral to support their physiological functions. Thus, while option B, mentioning 15 mg and 12 mg, exceeds the recommended levels for both sexes according to most nutrition guidelines, understanding the appropriate intake levels is key for meeting daily nutritional needs effectively.

9. What are the water-soluble vitamins?

- A. Vitamin A and D
- B. Vitamin C and the B-vitamins**
- C. Vitamin E and K
- D. Minerals

Water-soluble vitamins include vitamin C and the B-vitamins, which encompass a variety of essential nutrients such as B1 (thiamine), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B7 (biotin), B9 (folate), and B12 (cobalamin). These vitamins dissolve in water, which allows them to be readily absorbed by the body, but they also require regular intake as they are not stored in significant amounts. Excess amounts of water-soluble vitamins are usually excreted via urine, making it crucial to maintain a consistent supply through diet. The other options listed comprise fat-soluble vitamins or minerals. Vitamins A and D, for instance, are fat-soluble, meaning they can be stored in the body's fatty tissues and liver. Similarly, vitamins E and K fall into the same category. Minerals, which are essential nutrients like calcium, iron, and magnesium, are not categorized as vitamins and serve different functions in the body. Understanding these distinctions emphasizes the importance of different nutrients and their unique roles in health and metabolism.

10. Which vitamin is essential for tissue building and wound healing?

- A. B-complex vitamins
- B. Vitamin C**
- C. Vitamin D
- D. Vitamin E

Vitamin C is crucial for tissue building and wound healing primarily because it plays a significant role in the synthesis of collagen, a vital protein that helps maintain the structure of skin, blood vessels, tendons, and ligaments. Collagen is essential for the healing process, providing the framework that new tissue needs to develop properly during wound recovery. Additionally, Vitamin C functions as an antioxidant, helping to protect cells from oxidative stress, which can further support the healing process. It also aids in the absorption of iron from plant-based foods, which can enhance oxygen delivery to tissues, an important factor during wound healing. In summary, the significance of Vitamin C in tissue repair is largely attributed to its involvement in collagen synthesis and its supportive role as an antioxidant, making it an indispensable nutrient for effective wound healing.