Medical Biochemistry

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Bch 204

**Questions:**

1. Outline the toxicity values and deficiency manifestations of the following minerals;

* Potassium
* Calcium
* Magnesium
* Chloride
* Iron.
  1. **Potassium**:

**Toxicity value**: A potassium level higher than 5.5 mmol/L is critically high, and a potassium level over 6 mmol/L can be life-threatening.

**Deficiency manifestations;**

•Weakness and fatigue

•Muscle cramps and spasm

•Digestive problems

•Heart palpitations

•Muscle aches and stiffness

•Breathing difficulties.

1. **Calcium:**

**Toxicity values**: The Toxic Condition of Hypercalcemia and Hypercalciuria.

Hypercalcemia occurs when serum calcium levels are 2.63 mmol/L or greater depending on normative laboratory values.

**Deficiency manifestations**;

\* Numbness.

\* Tingling Fingers.

\* Muscle cramps.

\* Lethargy.

\* Poor appetite.

\* Weak or brittle fingernails.

\* Difficulty swallowing.

\* Fainting.

1. **Magnesium**:

**Toxicity values** : Magnesium toxicity develops after serum concentrations exceed 1.74–2.61 mmol/L.

**Deficiency manifestations**;

\* nausea

\* vomiting

\* loss of appetite

\* tiredness

\* weakness.

1. **Chloride**:

**Toxicity values**: The normal serum range for chloride is 96 to 106 mEq/L, therefore chloride levels at or above 110 mEq/L usually indicate kidney dysfunction.

**Deficiency manifestations;**

\* excessive fatigue.

\* muscle weakness.

\* breathing problems.

\* frequent vomiting.

\* prolonged diarrhea.

\* excessive thirst.

\* high blood pressure.

1. **Iron:**

**Toxicity values**: Toxic effects begin to occur at doses above 10–20 mg/kg of elemental iron. Ingestions of more than 50 mg/kg of elemental iron are associated with severe toxicity. In terms of blood values, iron levels above 350–500 μg/dL are considered toxic, and levels over 1000 μg/dL indicate severe iron poisoning.

**Deficiency manifestations;**

\* Extreme fatigue.

\* Weakness.

\* Pale skin.

\* Chest pain or shortness of breath.

\* Headache

\* Dizziness

\* Cold hands and feet.

\* Inflammation or soreness of your tongue.

\* Brittle nails.