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Pharmacology

17/MHS07/017 (c/o)

Assignment on mineral metabolism

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

A. POTASSIUM: This is called hyperkalemia, or high potassium.  a normal range of potassium is between 3.6 and 5.2 millimoles per liter (mmol/L) of blood. 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 MANIFESTATION:

• Fatigue

• Muscle cramps

• Muscle aches and stiffness

• Breathing difficulties

• Mood changes

B. CALCUIM: The Toxic Condition of Hypercalcemia and Hypercalciuria

Hypercalcemia occurs when serum calcium levels are 10.5 mg/dL (also expressed as 2.63 mmol/L) or greater depending on normative laboratory values

DEFICIENCY MANIFESTATION:

• Difficulty swallowing

• Numbness

• Growth and development delay in children

• Heart problem involving blood pressure and hearth rhythm

• Tooth erosion

• Insufficient blood clotting

C. MAGNESIUM: Hypomagnesemia is defined as a serum magnesium level less than 0.75 mmol/L. Magnesiumhomeostasis is largely controlled by the kidney, which typically excretes about 120 mg magnesium into the urine each day.

DEFICIENCY MANIFESTATION:

• Muscle twitches and cramps

• Hypomagnesemia

• Mental disorder

• Fatigue and muscle weakness

• High blood pressure

D.CHLORIDE: At approximately 40–60 ppm, a toxic pneumonitis and/or acute pulmonary edema can develop. Concentrations of about 400 ppm and beyond are generally fatal over 30 minutes, and at 1,000 ppm and above, fatality ensues within only a few minutes

DEFICIENCY MANIFESTATION:

• Fluid loss

• Hypochloremia

• Frequent vomiting

• High blood pressure

E. IRON: 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 MANIFESTATION:

\* Fatigue

\* Chest pain

\* Brittle nails

\* Inflammation

\* Cold hands and feet