18/MHS06/024

Med Lab Sci

Bch 204

Q1. Toxicity values of iron, calcium, magnesium, potassium, chloride.

(I) Iron toxicity value; in terms of blood values, iron levels above 350–500 μg/dL are considered toxic,

(II) Calcium toxicity values; Hypercalcemia occurs when serum calcium levels are 10.5 mg/dL

(III)Magnesium toxicity values; magnesium toxicity, which usually develop after serum concentrations exceed 1.74–2.61 mmol/L

(IV) Potassium toxicity values; Potassium levels above 4,700 mg are considered toxic

(V) chloride toxicity values; Chloride levels above 250mg/ltre are considered toxic

Q2. Deficiency manifestation of the minerals in Q1

Magnesium

Magnesium deficiency is an [electrolyte disturbance](https://en.wikipedia.org/wiki/Electrolyte_disturbance) in which there is a low level of [magnesium](https://en.wikipedia.org/wiki/Magnesium) in the body. It can result in multiple symptoms. Symptoms include [tremor](https://en.wikipedia.org/wiki/Tremor), poor coordination, muscle spasms, loss of appetite, personality changes, and [nystagmus](https://en.wikipedia.org/wiki/Nystagmus). Complications may include [seizures](https://en.wikipedia.org/wiki/Seizures) or [cardiac arrest](https://en.wikipedia.org/wiki/Cardiac_arrest) such as from points. Those with low magnesium often have [low potassium](https://en.wikipedia.org/wiki/Low_potassium).

Causes include low dietary intake, [alcoholism](https://en.wikipedia.org/wiki/Alcoholism), [diarrhea](https://en.wikipedia.org/wiki/Diarrhea), increased urinary loss, [poor absorption from the intestines](https://en.wikipedia.org/wiki/Malabsorption), and [diabetes mellitus](https://en.wikipedia.org/wiki/Diabetes_mellitus). A number of medications may also cause low magnesium, including [proton pump inhibitors](https://en.wikipedia.org/wiki/Proton_pump_inhibitors) (PPIs) and [furosemide](https://en.wikipedia.org/wiki/Furosemide). The diagnosis is typically based on finding low blood magnesium levels (hypomagnesemia). Normal magnesium levels are between 0.6-1.1 mmol/L (1.46–2.68 mg/dL) with levels less than 0.6 mmol/L (1.46 mg/dL) defining hypomagnesemia. Specific [electrocardiogram](https://en.wikipedia.org/wiki/Electrocardiogram) (ECG) changes may be seen.

potassium

in hypokalemia, the level of potassium in blood is too low. A low potassium level has many causes but usually results from vomiting, diarrhea, adrenal gland disorders, or use of diuretics. A low potassium level can make muscles feel weak, cramp, twitch, or even become paralyzed, and abnormal heart rhythms may develop.

Calcium

Hypocalcemia, commonly known as calcium deficiency disease, occurs when calcium levels in the blood are low. A long-term deficiency can lead to dental changes, cataracts, alterations in the brain, and osteoporosis, which causes the bones to become brittle.

Iron

Iron deficiency anemia is a common type of anemia — a condition in which blood lacks adequate healthy red blood cells. Red blood cells carry oxygen to the body's tissues.

As the name implies, iron deficiency anemia is due to insufficient iron. Without enough iron, your body can't produce enough of a substance in red blood cells that enables them to carry oxygen (hemoglobin). As a result, iron deficiency anemia may leave you tired and short of breath.

Chloride

Hypochloremia is an [electrolyte imbalance](http://chemocare.com/chemotherapy/side-effects/electrolyte-imbalance.aspx) and is indicated by a low level of chloride in the blood.  The normal adult value for chloride is 97-107 mEq/L.

Chloride in your blood is an important electrolyte and works to ensure that your body's metabolism is working correctly. Your kidneys control the levels of chloride in your blood. Therefore, when there is a disturbance in your blood chloride levels, it is often related to your kidneys.  Chloride helps the acid and base balance in the body.