

Chlorine

Physiological Functions

Chlorine is involved in maintenance of acid-base balance. Plasma chlorine contributes to plasma buffering capacity by diffusion into red blood cells which allows bicarbonate to exit without upsetting electrical neutrality in these cells. Transmembrane exchange of chlorine with sodium and potassium in all cells maintains electrical neutrality and fluid balance needed for appropriate intracellular osmolality and pH, and for normal muscle contraction and nerve transmission. Chlorine also promotes renal retention of potassium. Chlorine aids in protein digestion by contributing to synthesis of gastric hydrochloric acid.

Deficiency

Chlorine deficiency is rare because sodium chloride (table salt) is readily found in many processed foods. However, excessive losses in perspiration, diarrhea, vomiting, and in renal disease may lead to chlorine imbalance. Renal chloride losses are also enhanced by thiazide diuretics.

Toxicity

Dehydration is the only condition which can elevate serum chlorine levels. Toxic levels of intake have not been identified.

Requirements

Dietary requirements for chlorine have not been established because dietary deficiencies have not been observed.

Dietary Sources

Processed or commercially prepared foods containing salt (sodium chloride) are rich in chlorine. A small amount of chlorine is obtained from the water supply.