Summary:

Minerals are inorganic substances and are classified as macro and micronutrients based on the amount needed by humans per day. Macrominerals are those which are vital to health and that are required in the diet by more than 100mg/day. Microminerals or trace minerals are those required in the diet less than 20mg per day. The essential macrominerals are Calcium, Phosphorous, Magnesium, Sodium, Sulphur, Potassium and Chloride. Important microminerals of relevance in human nutrition are Iron, Zinc, Copper, Fluoride, Manganese, Chromium, Iodine, Molybdenum and Selenium. The ultratrace elements without established essentiality for humans, such as Cobalt, arsenic, boron, nickel, vanadium, and silicon, provide a negligible amount of weight. Minerals represent about 4-5% of body weight, or 2.8 to 3.5 kg in adult women and men, respectively. Approximately 50% of this weight is calcium, and another 25% is phosphorus, existing as phosphates. Almost 99% of the calcium and 70% of the phosphates are found in bones and teeth. Calcium, phosphorus and magnesium are required for many roles such as bone formation, tooth formation and to perform many physiological process. Sodium, potassium and chloride are required for water, electrolyte and pH balances. Sulphur is component of some of the amino acids and vitamins. Deficiency symptoms of calcium causes rickets, osteomalacia, osteoporosis, and tetany, while phosphorus causes osteomalacia, rickets, and cardiac manifestations. Deficiency of phosphorus and magnesium develops symptoms related to neuromuscular, hematologic and muscular weakness. Weakness, anorexia, poor growth, loss of appetite, mental apathy, lethargy are some of the symptoms related to deficiencies of sodium, potassium and chloride. Deficiency of utltratrace elements is observed in animals with the symptoms of curtailed growth, altered bone mineralization, depressed growth and hematologic changes.