Summary:

Absorption is a complex process in which the nutrients pass through the intestinal mucosal cells into the bloodstream. Mammalian epithelia are enveloped by a plasma membrane composed of a phospholipid bilayer which acts as a selective barrier to the transcellular movement of molecules and ions between the extracellular and intracellular fluid compartments. Vitamin A, D, E and K are regarded as fat soluble vitamins. Emulsification of fat and formation of micelles are important steps in the absorption of fat soluble vitamins. Fat soluble vitamins are stored mainly in the liver. Fat soluble vitamins differ structurally and are present in different forms. Vitamin A comprises a β-ionone (cyclohexenyl) ring attached at the C-6 position and side chain containing two isoprene units with four conjugated double bonds. Vitamin D belongs to the family of secosteroids with an open ring structure. Tocopherols are methyl-substituted derivatives of tocol, which comprises a chroman-6-ol ring attached at C-2 to a saturated isoprenoid side chain. Vitamin K compounds are derivatives of naphthoquinone and differ in side chain. Vitamin A is an essential dietary factor for normal embryogenesis, cell growth and differentiation, reproduction, maintenance of the immune system, and vision. Vitamin D is important for mineralization of bones and absorption of calcium and phoshorus. Vitamin E is required for fertility in animals. Vitamin E increases synthesis of hemeproteins by increasing synthesis of ALA synthase and ALA dehydratase. Vitamin E prevents dietary vitamin A and carotenes from oxidative damage. Vitamin K is essential for the activation of specific proteins such as prothrombin involved in blood clotting. The stability of fat soluble vitamins is greatly influenced by the presence of heat, light, oxygen, acid, alkali and enzymes. The bioavailability of fat soluble vitamins is affected by high intake of fibre, smoking and alcoholism.