

AL-MUSTAQBAL UNIVERSITY COLLEGE

**Department of Medical laboratory Techniques
Department**

Clinical Biochemistry

(Estimation of ALP)



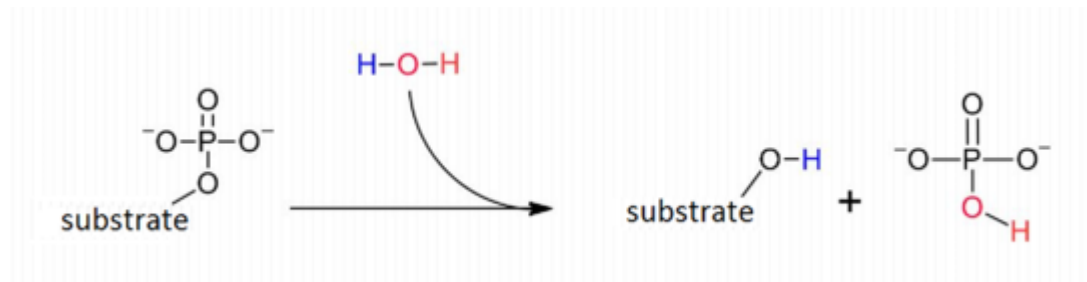
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PHOSPHATASE

phosphatase are group of enzyme that uses water to cleave a **phosphoric acid monoester** into a **phosphate ion** and an **alcohol**. Because a phosphatase enzyme catalyzes the **hydrolysis** of its **substrate**.



ALKALINE PHOSPHATASE

An alkaline phosphatase (ALP) is an enzyme found throughout the body, but it is mostly found in the liver, bones, placenta , kidneys, and digestive system.

Optimum pH of alkaline phosphatase activity is 9-10.

When the liver is damaged, ALP may leak into the bloodstream. High levels of ALP can indicate **liver disease** or **bone disorders**.

In the serum, two types of alkaline phosphatase isozymes predominate: skeletal and liver.

During childhood the majority of alkaline phosphatase are of skeletal origin.

Humans and most other mammals contain the following alkaline phosphatase isozymes:

1-ALPI – intestinal

2-ALPL – tissue-nonspecific (expressed mainly in liver/bone/kidney)

3-ALPP – placental

4-GCAP – germ cell

Physiological Increase:

Growing children and pregnant women.

Pathological Increase

1-Liver disease :(biliary obstruction, cholestasis , Hepatitis ,Cirrhosis, Lymphoma, and malignancy)

2-Bone disease: (rickets, osteomalacia, Osteoblastic bone tumors, Osteoporosis, Paget's disease and hyperparathyroidism)

Pathological decrease

1-Hypophosphatasia, an autosomal recessive disease

2-Postmenopausal women receiving estrogen therapy because of aging

3-Pernicious anemia and Aplastic anemia

4-Wilson's disease

5-Hypothyroidism

6- scurvy

The normal range

Children : 71 – 142 IU/L

Adults: 21 – 92 IU/L