The twelfth Experiment :

SERUM ALKALINE PHOSPHATASE (ALP)

Alkaline phosphatase (ALP) is an enzyme originating mainly in:

1) The bone.

2) Liver.

3) placenta.

with some activity in the kidney and intestines.

- It is called *alkaline* because it functions best at a pH of 9 .
- ALP levels are age and gender dependent.

Alkaline phosphatase is used as an index of liver and bone disease when correlated with other clinical findings.

- In bone disease, the enzyme level rises in proportion to new bone cell production resulting from osteoplastic activity and the deposit of calcium in the bones.
- In liver disease, the blood level rises when excretion of this enzyme is impaired as a result of obstruction in the biliary tract.

Reference Values:

Females:

1-12 years: <350 U/L

>15 years: 25-100 U/L

Males:

1-12 years: <350 U/L

12-14 years: <500 U/L

>20 years: 25-100 U/L

Clinical significance:

Increased levels of ALP in:

a) liver disease (Obstructive jaundice, hepatic carcinoma, Hepatocellular cirrhosis, Hepatitis, infectious mononucleosis..)
b) Diabetes mellitus and diabetic hepatic lipidosis.
c) Chronic alcohol ingestion.
d) Bone disease (Metastatic bone tumor, Osteogenic sarcoma, Osteomalacia)

Diseased levels of ALP in:

a) Hyperparathyroidism and hyperthyroidism .
b) Pulmonary and myocardial infarctions.
c) Cancer of lung or pancreas.
d) Ulcerative colitis, peptic ulcer.
e) Chronic renal failure.
f) Magnesium and zinc deficiency (nutritional).
g) Others..

- ALP levels increase at room temperature and in refrigerated storage. Testing should be done the same day.
- ALP levels decrease if blood is anticoagulated.
- ALP levels increase after fatty meals.