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**Lab Dept:** Chemistry

**Test Name:** ALKALINE PHOSPHATASE TOTAL & ISOENZYMES

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***General Information***

**Lab Order Codes:** ALKTI

**Synonyms:** ALKP Isoenzymes, serum; Alkaline Phosphatase Fractionation; ALP Isoenzymes

**CPT Codes:** 84080 – Alkaline phosphatase; isoenzymes  
84075 – Alkaline phosphatase; total

**Test Includes:** Alkaline phosphatase, total in U/L; Alkaline phosphatase, isoenzymes (bone, liver and intestine fractions) reported in percentage U/L.

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***Logistics***

**Test Indications:** Useful to aid in the diagnosis and treatment of liver, bone, intestinal, and parathyroid diseases, determining the tissue source of increased alkaline phosphatase (ALP) activity in serum, or differentiating between liver and bone sources of elevated ALP.

**Lab Testing Sections:** Chemistry - Sendouts

**Referred to:** Mayo Clinic Laboratories (MML Test: ALKP)

**Phone Numbers:** MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** 3 – 5 days, testing performed Tuesday - Saturday

**Special Instructions:** None

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***Specimen***

**Specimen Type:** Blood

**Container:** SST (Gold, marble or red) or red no-gel tube

**Draw Volume:** 3 mL (Minimum: 3.0. mL) blood

<b>Processed Volume:</b>	1.0 mL (Minimum: 1.0 mL) serum
<b>Collection:</b>	Routine venipuncture
<b>Special Processing:</b>	<p>Lab Staff: Centrifuge specimen within 2 hours of collection, remove serum aliquot into screw-capped round bottom plastic vial. Store and ship at frozen temperatures. Forward promptly.</p> <p>Specimen stable for 14 days frozen, though serum must be removed from sitting on gel layer of SST within 7 days of collection.</p> <p>Serum also stable ambient or refrigerated for 7 days.</p>
<b>Patient Preparation:</b>	Fasting for 8 hours is required
<b>Sample Rejection:</b>	Gross icterus or hemolysis; mislabeled or unlabeled specimens

### ***Interpretive***

#### **Reference Range:**

#### ALKALINE PHOSPHATASE

##### Males

0 to 14 days: 83-248 U/L  
 15 days to <1 year: 122-469 U/L  
 1 to <10 years: 142-335 U/L  
 10 to <13 years: 129-417 U/L  
 13 to <15 years: 116-468 U/L  
 15 to <17 years: 82-331 U/L  
 17 to <19 years: 55-149 U/L  
 ≥ 19 years: 40-129 U/L

##### Females

0 to 14 days: 83-248 U/L  
 15 days to <1 year: 122-469 U/L  
 1 to <10 years: 142-335 U/L  
 10 to <13 years: 129-417 U/L  
 13 to <15 years: 57-254 U/L  
 15 to <17 years: 50-117 U/L  
 ≥ 17 years: 35-104 U/L

#### ALKALINE PHOSPHATASE ISOENZYMES

Reference values have not been established for patients less than 18 years of age.

For patients 18 years and older:

Liver %: 30.2-74.7    Liver U/L: 15.8-71.9

Bone %: 23.8-68.3    Bone U/L: 12.0-56.7

Intestine %: ≤ 22.5    Intestine U/L: ≤ 12.6

**Critical Values:** N/A

**Limitations:**

Alkaline phosphatase (ALP) Isoenzyme:

-High concentrations of phosphate, oxalate, citrate, and cyanide will inhibit ALP activity.

-Excess glycine may inhibit ALP activity by complexing magnesium.

-Patients should be fasting. Patients may have an elevated intestinal ALP about two hours after a fatty meal.

**Methodology:**

Total Alkaline Phosphatase: Colorimetric

Isoenzymes: Electrophoreses

**References:**

[Mayo Clinic Laboratories](#) January 2025

**Updates:**

1/30/2025: Initial entry. Replaces obsolete ALFR (formerly Mayo's ALKI)