MAYO CLINIC LABORATORIES

# Test Definition: ALS

Aldolase, Serum

## Overview

### Useful For
Detection of muscle disease

### Method Name
Photometric

### NY State Available
Yes

## Specimen

### Specimen Type
Serum Red

### Specimen Required
**Supplies**: Sarstedt 5 mL Aliquot Tube (T914)
**Collection Container/Tube:** Red top (serum gel/SST are **not acceptable**)
**Submission Container/Tube:** Plastic vial
**Specimen Volume:** 1 mL
**Collection Instructions:**
1. Within 1 hour of collection, centrifuge and aliquot serum into a plastic vial.
2. Send refrigerated.

### Forms
If not ordering electronically, complete, print, and send a General Request (T239) with the specimen.

### Specimen Minimum Volume
0.5 mL

### Reject Due To

| | |
|---|---|
| Gross hemolysis | Reject |
| Gross lipemia | Reject |
| Gross icterus | Reject |

### Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Serum Red | Refrigerated (preferred) | 7 days | |
| | Frozen | 60 days | |

## Clinical & Interpretive

### Clinical Information

Aldolase is necessary for glycolysis in muscle as a rapid response pathway for production of adenosine triphosphate independent of tissue oxygen.

Aldolase catalyzes the conversion of fructose 1,6-diphosphate into dihydroxyacetone phosphate and glyceraldehyde 3-phosphate, an important reaction in the glycolytic breakdown of glucose to lactate in muscle.

Aldolase is a tetramer whose primary structure depends upon the tissue from which it was synthesized (highest expression in liver, muscle, brain).

Elevated values are found in muscle diseases, such as Duchenne muscular dystrophy, dermatomyositis, polymyositis, and limb-girdle muscular dystrophy. While elevated creatinine kinase (CK) levels are more sensitive and specific for muscle disease, occasionally elevated aldolase is observed in some patients with myositis that have normal CK values.

### Reference Values

<18 years: <14.5 U/L
> or =18 years: <7.7 U/L

### Interpretation

Measuring serum muscle enzymes is common in the evaluation of patients with muscle weakness or muscle myalgia. When elevated, serum muscle enzymes can help differentiate muscle disease derived muscle weakness from a neurogenic cause. The highest levels of aldolase are found in progressive (Duchenne) muscular dystrophy. Lesser elevations are found in dermatomyositis, polymyositis, and limb-girdle muscular dystrophy. In dystrophic conditions causing hyperaldolasemia, the increase in aldolase becomes less dramatic as muscle mass decreases.

### Cautions

No significant cautionary statements

### Clinical Reference

1. Bohlmeyer TJ, Wu AH, Perryman MB. Evaluation of laboratory tests as a guide to diagnosis and therapy of myositis. Rheum Dis Clin of North Am. 1994;20(4):845-856
2. Bohan A, Peter JB, Bowman RL, Pearson CM. Computer-assisted analysis of 153 patients with polymyositis and dermatomyositis. Medicine (Baltimore). 1977;56(4):255-286. doi:10.1097/00005792-197707000-00001
3. Thompson RA, Vignos PJ Jr. Serum aldolase in muscle disease. AMA Arch Intern Med. 1959;103(4):551-564. doi:10.1001/archinte.1959.00270040037004
4. Ganguly A. Management of muscular dystrophy during osteoarthritis disorder: A topical phytotherapeutic treatment protocol. Caspian J Intern Med. 2019;10(2):183-196. doi:10.22088/cjim.10.2.183

## Performance

### Method Description
The aldolase activity is determined from the rate at which reduced nicotinamide adenine dinucleotide (NADH) is oxidized to NAD(+) and is measured photometrically by a decrease in absorbance. For each mole of substrate hydrolyzed, 2 moles of coenzyme (NADH) are oxidized. This 1:2 ratio is applied in the calculation of aldolase activity. Lactate dehydrogenase is present in the reagent for the purpose of eliminating interference from endogenous pyruvate in the specimen.(Package insert: Aldolase Reagent. Roche Diagnostics; V 5.0, 01/2021)

### PDF Report
No

### Day(s) Performed
Monday through Sunday

### Report Available
1 to 3 days

### Specimen Retention Time
7 days

### Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

## Fees & Codes

### Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

### Test Classification
This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

### CPT Code Information
82085

### LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---|---|---|
| ALS | Aldolase, S | 1761-6 |

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