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**Lab Dept:** Chemistry  
**Test Name:** PYRUVATE, BLOOD

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***General Information***

**Lab Order Codes:** PYRM  
**Synonyms:** Pyruvic Acid, Blood  
**CPT Codes:** 84210 - Pyruvate  
**Test Includes:** Blood pyruvate concentration reported in mmol/L and mg/dL.

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***Logistics***

**Test Indications:** Pyruvate, in conjunction with lactate determined from a blood sample collected at the same time, is used to assess the lactate-to-pyruvate (L/P) ratio. The L/P ratio is considered a helpful (not diagnostic) tool in the evaluation of patients with possible disorders of mitochondrial metabolism. Pyruvic Acid levels alone have little clinical utility.

**Lab Testing Sections:** Chemistry - Sendouts

**Referred to:** Mayo Medical Laboratories (MML Test: PYR)

**Phone Numbers:** MIN Lab: 612-813-6280  
STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** 6 - 8 days, performed Monday and Thursday

**Special Instructions:** Special collection tubes containing 6% perchloric acid **must be** obtained from the refrigerated laboratory supplies (Mayo Supply T012). See [Patient Preparation](#). See [Collection](#).

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***Specimen***

**Specimen Type:** Whole blood

**Container:** Syringe AND Special collection tube containing 2.5 mL of 6% perchloric acid **pre-chilled** prior to draw. Check tube expiration date before drawing.

**Draw Volume:** 1 mL blood

**Processed Volume:** Same as Draw Volume

**Collection:** Draw blood (enough to transfer 1 mL) in a syringe and **immediately** transfer exactly 1 mL of blood into the **pre-chilled** special collection tube. Then shake the tube vigorously to mix. Send the tube immediately to the laboratory.

**Note:** Specimen **should not** be collected by capillary draw. Collection tubes have a 12 month outdate, so make sure to check the expiration date on the tube before using.

**Special Processing:** Lab Staff: **Do Not** centrifuge. Send whole blood specimen in original collection container at refrigerated temperatures. Forward promptly.

**Patient Preparation:** 4 hour fast preferred

**Sample Rejection:** Specimen improperly collected, wrong collection tube used, mislabeled or unlabeled specimens

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***Interpretive***

**Reference Range:**

Note: Results will be reported in both mmol/L and mg/dL.	
0.08 – 0.16	mmol/L
0.7 – 1.4	mg/dL (NIH Unit)
<p>Interpretation: An elevated lactate-to-pyruvate (L:P) ratio may indicate inherited disorders of the respiratory chain complex, tricarboxylic acid cycle disorders and pyruvate carboxylase deficiency. Respiratory chain defects usually result in L:P ratios &gt;20.</p> <p>A low L:P ratio (disproportionately elevated pyruvic acid) may indicate an inherited disorder of pyruvate metabolism. Defects of the pyruvate dehydrogenase complex result in L:P ratios &gt;10.</p> <p>The L:P ratio is characteristically normal in other patients. An artifactually high ratio can be found if the patient is acutely ill.</p> <p>Cerebrospinal fluid (CSF) L:P ratio may assist in evaluation of patients with neurologic dysfunction and normal blood L:P ratios. Blood and CSF specimens should be collected at the same time.</p>	

**Critical Values:** N/A

**Limitations:**

Correct sample collection and handling is crucial to achieve reliable results.

Pyruvic acid levels alone have little clinical utility. Abnormal concentrations of pyruvic acid, and lactate-to-pyruvate (L:P) ratios, are not diagnostic for a particular disorder but must be interpreted in the context of the patient's clinical presentation and other laboratory studies. The determination of pyruvic acid is of diagnostic value when lactic acid is measured and the L:P ratio is established in the same specimen.

When comparing blood and cerebrospinal fluid (CSF) L:P ratios, blood and CSF specimens should be collected at the same time.

**Methodology:**

Spectrophotometry (SP)

**References:**

[Mayo Medical Laboratories](#) April 2020

**Updates:**

6/21/2004: Test moved from Fairview University Diagnostic Laboratories to Mayo Medical Laboratories. Note: Test reference range previously reported as: Adult: 0.05 - 0.15 mmol/L and methodology previously was enzymatic.

4/4/2011: Added mg/dL reference range and information for pre-chilling collection tubes.

7/13/2017: Update TAT

4/22/2020: Update TAT and collection info

3/3/2023: Clarified special tube is stored in lab refrigerator