

Myoglobin

General:

Myoglobin is a single-chain globular protein of 153 amino acids, containing a heme (iron-containing porphyrin) prosthetic group in the center around which the remaining apoprotein folds. It has eight alpha helices and a hydrophobic core (porphyrin ring). It has a molecular weight of 16,700 Daltons, and is the primary oxygen-carrying pigment of muscle tissues.

The distal prosthetic group of the myoglobin molecule provides three functions: forming hydrogen bonds, increasing O₂ binding; preventing the binding of carbon monoxide. CO binds to heme 23,000 times better than O₂, but only 200 times better in hemoglobin and myoglobin.

Myoglobin is a sensitive marker for muscle injury, it is released from damaged muscle tissue (rhabdomyolysis), which has very high concentrations of myoglobin. The released myoglobin is filtered by glomeruli and reaches the tubules, where it may cause obstruction and renal dysfunction or acute renal failure. It is also a potential marker for heart attack in patients with angina pectoris.

The following tests are available:

- **Myoglobin in urine**

Indication: pre-renal proteinuria, rhabdomyolysis

Material: 10 ml urine

Preanalytics: spontaneous urine

TAT: 7-10 days*

Method: nephelometry

Units: µg/l

Ref.- range: <8.00

Note: Troponin T (FML, same day) is more specific for infarction, because myoglobin is released also in skeletal muscle cell degeneration.

Increased in: heart attack (maximum level 2 hours after the acute event), rhabdomyolysis, muscular overexertion, crush syndrome

- **Myoglobin in serum**

Indication: muscle damage, rhabdomyolysis, heart muscle damage

Material: 1 ml serum

TAT: 7-10 days*

Method: nephelometry

Units: $\mu\text{g/l}$

Ref.- range: up to 70.0

For complete list of laboratory test offered at Freiburg Medical Laboratory, please visit
<http://www.fml-dubai.com/parameter-listings/>