

## Serum Magnesium

**Internationally accepted Standard Reference Range:**

**1.8 to 3.0 mg/dL (0.7 mmol/L to 1.2 mmol/L)**

**Optimum Desirable Value:**

**2.4 to 2.8 mg/dL (1.0 mmol/L to 1.2 mmol/L)**

**(as per International Standards of Preventive and Anti-Aging Medicine)**

**RDA = Recommended Daily Allowance = Elemental Magnesium 350 mg/day**

**ODA = Optimum Daily Allowance = Elemental Magnesium 600 mg/day**

**Therapeutic dose of Intracellular Organic Magnesium = 1400 mg/day in 4 equally divided doses.**

**350 mg Elemental Magnesium with other supporting Nutrients when orally delivered at Intracellular levels, q4h, for minimum of six months will help to raise serum Magnesium to 2.4 mg/dL.**

**Around this time please do a Serum Magnesium Test after discontinuing all Magnesium supplementation for a minimum period of 7 days.**

**Continue Intracellular Magnesium supplements thereafter till serum Magnesium reaches Optimum level of 2.4 mg/dL (1.0 mmol/L) given above.**

**If serum Uric Acid or Creatinine levels are above Optimum and closer to the upper end of the Standard Reference Range, please discount all serum mineral levels including Magnesium by 10% to 20% to arrive at the true (retained) serum levels.**

<b>Renal Profile</b>	<b>Optimum Level</b>	<b>(Standard Reference Range)</b>
<b>Blood Urea Nitrogen</b>	<b>12.0 mg/dL</b>	<b>7.0 to 18.0 mg/dL</b>
<b>Serum Creatinine</b>	<b>0.8 mg/dL</b>	<b>0.5 to 1.5 mg/dL</b>
<b>Serum Uric Acid</b>	<b>4.0 mg/dL</b>	<b>3.6 to 7.8 mg/dL</b>

**If Blood Urea Nitrogen (BUN) is at the lower end of the Standard Reference Range or below normal, it means that there is a serious Nitrogen Imbalance in the body caused by very low dietary protein intake. In that case Readings in the Renal Profile will be inconclusive and should not be relied upon.**

**If there is no protein / nitrogen deficiency in the body, and the serum creatinine and serum uric acid are much higher than the Optimum Levels, it would be advisable to first Detox the Kidneys to lower these numbers and bring the kidneys to perfect functioning.**

**If in doubt about a possible kidney malfunction (Renal Insufficiency), please do the serum Cystatin - C Test.**

**The Cystatin - C test helps identify kidney dysfunction at earlier stages, before symptoms appear and Creatinine levels rise. Again, this is a serum protein and will be inconclusive in case of a serious protein / nitrogen deficiency in the body.**

**A kidney malfunction (Renal Insufficiency) invariably causes Renal Induced Hypertension. This does not respond to Hypertension lowering drugs like Amlodipine. The solution to lowering such Renal Induced Hypertension is to first Detox / repair the Kidneys and bring the Renal Profile to Optimum levels.**

# CYSTATIN C

*Cystatin C* (cysteine protease inhibitor) is a serum protein that is filtered out of the blood by the kidneys and that serves as a measure of kidney function. An increased serum Cystatin C corresponds to a decreased GFR (glomerular filtration rate) and hence to kidney dysfunction.

*The Cystatin C test helps identify kidney dysfunction at earlier stages, before symptoms appear and creatinine levels rise.*

It also helps predict impending cardiovascular problems such as heart attack, stroke etc, in the elderly, as increased serum Cystatin C levels correspond to increased Homocysteine levels which is an independent risk factor for the premature development of coronary artery disease and thrombosis. Homocysteine is used in screening individuals who may be at risk for heart disease and stroke.

Another advantage is that, unlike creatinine, blood levels of Cystatin C are less influenced by age, gender, race, or muscle mass, which makes this a better indicator of kidney function. Hence, Cystatin C test is a more accurate to the standard creatinine test to screen for and monitor kidney dysfunction in those with suspected or known kidney diseases.

Cystatin C has nothing to do with the statin drugs that are used to lower cholesterol. Cystatin C levels may be affected by some drugs: corticosteroids can increase levels while cyclosporine can decrease them.

Measurements can be made and interpreted from a single random blood sample

## **Reference Range:**

**Male & Female: 0.53 to 0.95mg/L**

## **Optimum Desirable Value:**

**Male & Female:  $\leq 0.7$ mg/L**

## Medical Tests

### Serum Magnesium — Test

#### Definition

A serum magnesium test is done to see how much magnesium there is in the blood.

#### Alternative Names

Mg+2

#### How the test is performed

Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand. The site is cleaned with germ-killing medicine (antiseptic). The health care provider wraps an elastic band around the upper arm. This applies pressure to the area and causes the vein to swell with blood.

Next, the health care provider gently inserts a needle into the vein. The blood collects in an air-tight vial or syringe attached to the needle. During the procedure, the band is removed to restore circulation. Once the blood has been collected, the needle is removed, and the puncture site is covered to stop any bleeding.

In infants or young children, the site is cleaned with germ-killing medicine (antiseptic) and punctured with a sharp needle or a lancet. The blood may be collected in a small glass tube called a pipette, or onto a slide or test strip. A bandage may be placed over the area if there is any bleeding.

#### How to prepare for the test

There is no special preparation for this test.

#### How the test will feel

When the needle is inserted to draw blood, you may feel moderate pain, or only a prick or stinging sensation. Afterward, there may be some throbbing.

#### Why the test is performed

This test is done when your doctor suspects you may have abnormal levels of magnesium in your blood.

About half of the body's magnesium is found in bone. The other half is found inside cells of body tissues and organs.

Magnesium is necessary for nearly all biochemical processes in the body. It helps maintain normal muscle and nerve function, keeps the bones strong, controls the heart beat, and helps regulate blood pressure. Magnesium also controls blood sugar levels and helps support the body's defense (immune) system.

#### Normal Values

1.8 to 3.0 mg/dL. Normal value ranges may vary slightly among different laboratories.

#### What abnormal results mean

High magnesium levels may be seen in persons who have:

- Addison's disease
- Chronic renal failure

- Dehydration
- Diabetic acidosis
- Oliguria

Low magnesium levels may be seen in persons who have:

- Alcoholism
- Chronic diarrhea
- Delirium tremens
- [Hemodialysis](#)
- Hepatic (liver) cirrhosis
- Hyperaldosteronism
- Hypoparathyroidism
- Pancreatitis
- Too much insulin
- Toxemia of pregnancy
- Ulcerative colitis

### What the risks are

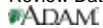
- Excessive bleeding
- Fainting or feeling light-headed
- Hematoma (blood accumulating under the skin)
- Infection (a slight risk any time the skin is broken)
- Multiple punctures to locate veins

### Special considerations

Veins and arteries vary in size from one patient to another, and from one side of the body to the other. Obtaining a blood sample from some people may be more difficult than from others.

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