Bence-Jones Protein (Urine)

Does this test have other names?

urine immunofixation electrophoresis, immunoassay for free light chains

What is this test?

The Bence-Jones protein urine test is used most often to diagnose and check on multiple myeloma, a type of cancer. Or an abnormal Bence-Jones test result may mean you have a type of malignant lymphoma. These are cancers of the lymphatic system. Multiple myeloma is a type of blood cancer that affects plasma cells. These are immune system cells that make antibodies to help fight infections. Most plasma cells live in bone marrow, so multiple myeloma tumors are often found in bone. Bone marrow is where blood cells are made. Multiple myeloma takes up space and leaves less space for normal bone marrow. This can cause problems, such as:

- **Anemia.** This is not enough red blood cells. It can lead to weakness and tiredness.
- **Thrombocytopenia.** This is not enough blood platelets called thrombocytes. These are needed to form blood clots. This causes excess bleeding or bruising.
- **Leukopenia.** This is not enough white blood cells. It can lead to a weakening of the immune system.

Healthy plasma cells are just 1 kind of blood cell affected by multiple myeloma. Myeloma tumors also make monoclonal antibodies. Monoclonal means they are all of 1 kind. This makes them ineffective and even harmful. These cells do not fight infections, and they also can damage the kidneys. The monoclonal antibodies are made of 2 types of proteins. Bence-Jones proteins are 1 type. These proteins show up in the urine in many people with multiple myeloma. Myeloma cells also make chemical signals that tell osteoclasts to work a lot. Osteoclasts are cells that break down bone. Because of this, multiple myeloma can weaken bones and cause breaks. The breakdown of bone can also lead to higher levels of calcium in the blood. High blood calcium (hypercalcemia) can cause many problems. These include from thirst and excess urination to dehydration, numbness, weakness, and kidney problems. In rare cases, this may cause coma.

Bence-Jones protein can also be in your urine if you have monoclonal gammopathy of undetermined significance (MGUS). With this condition, your plasma cells make more of 1 kind of antibody than they should. But they don't form a tumor or make enough antibodies to do damage. MGUS doesn't generally need treatment. But if you have MGUS, you are at higher risk for multiple myeloma. You are also at higher risk for lymphoma, a cancer affecting white blood cells. You are also at higher risk for amyloidosis. This is the buildup of certain proteins in tissues. For these reasons, you should be watched by a healthcare provider.

Why do I need this test?

You may need this test if you have some of these symptoms:

- Bone pain or breaks, especially in the back, hips, or skull
- High blood calcium
- Low levels of red or white blood cells or platelets
- Nervous system problems, such as pain, numbness, or weakness
- Stroke-like symptoms, such as confusion and dizziness
- Weakness and swelling of the legs
- A lot of infections

What other tests might I have along with this test?

The diagnosis of multiple myeloma is often done with a series of tests. You may also have tests, such as:

- **Complete blood count (CBC).** This checks the numbers of red blood cells, white blood cells, and platelets in your blood.
- **Chemistry profile.** This checks your levels of albumin, blood urea nitrogen, calcium, creatinine, and lactate dehydrogenase. These levels can give information about kidney function and how multiple myeloma has spread.
- **Beta-2 microglobulin and C-reactive protein.** The levels of these proteins help show how multiple myeloma has spread.
- **Quantitative immunoglobulin testing.** This checks levels of different kinds of antibodies.
- **Serum protein electrophoresis (SPEP).** This checks the levels of proteins in the blood. This test can find M protein. M protein is another name for a large number of abnormal monoclonal antibodies.
- **Immunofixation electrophoresis (IFE).** This test also looks at proteins that come from abnormal antibodies.
- **Electrophoresis and immunoelectrophoresis of concentrated urine.** Both of these tests are other ways of finding a monoclonal protein in the urine.

You may also have tests, such as:

- **Imaging tests.** X-rays can be used to check for bone damage. Other tests, such as MRI, CT, or PET, may be used to look at bones for damage and also to see the number and size of myeloma tumors.
- **Bone marrow biopsy.** A small amount of bone marrow is taken with a needle. The bone marrow cells are checked in a lab for signs of multiple myeloma.

What do my test results mean?

Test results may vary depending on your age, gender, health history, and other things. Your test results may be different depending on the lab used. They may not mean you have a problem. Ask your healthcare provider what your test results mean for you.

Bence-Jones proteins are not usually in urine. The presence of Bence-Jones proteins in urine can be a sign of multiple myeloma or another rare condition called Waldenstrom macroglobulinemia. About 50% to 80% of people with multiple myeloma have Bence-Jones proteins in their urine.

If you have been diagnosed with multiple myeloma, a Bence-Jones protein urine level can also be used as 1 of several ways to find out the stage of the cancer. Stage of cancer means how much it has grown and spread. The other factors used in staging are your calcium level, hemoglobin level, and X-ray findings.

The Bence-Jones proteins are also found in some people with lymphoma.

How is this test done?

This test may be done with a 24-hour urine sample. For this sample, you must collect all of your urine for 24 hours. Empty your bladder completely first thing in the morning without collecting it. Note the time. Then collect your urine every time you go to the bathroom over the next 24 hours. You will collect it in a container that your healthcare provider or the lab gives you.

Or you may have urine protein electrophoresis. This test checks the levels of proteins in the urine, including Bence-Jones proteins. This test does not need a 24-hour sample. It is done with a small sample of urine in a collection cup.

Does this test pose any risks?

This test poses no known risks.

What might affect my test results?

If your healthcare provider uses a test strip to look for Bence-Jones proteins, the strip may not find them. The best way to find these proteins is to use electrophoresis or an immunoassay. Also talk with your healthcare provider to find out if any of the medicines you are taking might affect your test results.

How do I get ready for this test?

You don't need to prepare for this test. But be sure your healthcare provider knows about all medicines, herbs, vitamins, and supplements you are taking. This includes medicines that don’t need a prescription and any illegal drugs you may use.