TEST

Immunofixation - urine

Urine immunofixation looks for and identifies abnormal antibody proteins in urine.

WHAT IT MEASURES
Abnormal identical antibody proteins, especially free light chains

SAMPLE
Urine

FASTING NEEDED?
No

HOW LONG IT TAKES
Minutes for spot sample; 24 hours for timed collection

RESULTS IN
Usually 1-3 working days; laboratory timing differs

USED FOR
Diagnosis and monitoring of monoclonal protein disorders

MAIN LIMITATION
Low or intermittent protein excretion can produce a negative result

Overview

Urine immunofixation is a laboratory test that looks for abnormal antibody proteins in urine. It can also identify the type of protein found.

Antibodies, also called immunoglobulins, are made from heavy chains and light chains. Light chains are called kappa or lambda. Some abnormal plasma cells make many identical copies of one antibody or light chain. This is known as a monoclonal protein .

Free monoclonal light chains found in urine are sometimes called Bence Jones proteins . Their presence can be linked with plasma cell conditions, including monoclonal gammopathy, multiple myeloma and light-chain amyloidosis. However, this test cannot diagnose any of these conditions by itself.

Immunofixation is often performed after urine protein electrophoresis, which separates proteins according to their physical properties. Immunofixation then helps identify whether a suspicious protein is monoclonal and whether it contains kappa or lambda light chains.

Why the test is ordered

Your clinician may order urine immunofixation when other blood or urine tests suggest that an abnormal antibody protein could be present.

Possible reasons include:

The test is usually considered alongside blood tests, symptoms, medical history and sometimes imaging or a tissue or bone marrow biopsy.

- Investigating an abnormal result on blood protein electrophoresis
- Checking unexplained protein in the urine
- Assessing possible plasma cell or antibody-producing cell disorders
- Looking for light chains that may not appear clearly on routine urine tests
- Monitoring a previously identified monoclonal protein
- Supporting an assessment for light-chain amyloidosis

Who should have the test

Urine immunofixation is not generally used to screen everyone for myeloma or related conditions. It is usually ordered when there is a specific clinical or laboratory reason to look for a monoclonal protein.

You may have it after an abnormal serum protein electrophoresis, serum immunofixation or serum free light-chain test. It may also be requested if routine urine testing shows protein that needs further investigation.

People already being monitored for a monoclonal protein may have repeat testing. The type and timing of follow-up depend on the condition, previous results and treatment plan.

How to prepare

You do not need to fast. You can usually eat, drink and take your regular medicines unless you have received different instructions for another test being done at the same time.

Ask whether the laboratory needs a one-time sample or a 24-hour collection. The preparation and collection method differ.

For a 24-hour collection, you will receive a container and instructions. Some containers contain a preservative. Do not empty or rinse the container, and avoid touching any preservative inside

it.

Tell the requesting clinician or laboratory about medicines and recent treatments, especially intravenous immunoglobulin or monoclonal antibody treatment. Do not stop prescribed medicine unless you have been specifically told to do so.

What happens during the test

For a spot test, you pass urine into a clean specimen container. The collection itself normally takes only a few minutes.

For a 24-hour test, you collect all urine produced over a full day. A common collection process is:

Missing even one sample can make a 24-hour collection inaccurate, especially if the laboratory is also calculating how much monoclonal protein you pass per day.

The laboratory separates the urine proteins and applies antibodies that bind to particular heavy and light chains. The resulting pattern shows whether a monoclonal protein is present and helps identify its type.

- Empty your bladder when you start, but do not collect that first urine
- Record the start time
- Collect every urine sample for the next 24 hours
- Collect your final sample at the same time the following day
- Store the container exactly as instructed

Understanding your results

A result may state that no monoclonal immunoglobulin or free light chain was detected. This means the test did not find one in that sample. It does not always exclude a plasma cell disorder because some abnormal proteins are present at very low levels, are released intermittently or are not passed into urine.

If a monoclonal protein is found, the report may describe it as kappa or lambda. It may also identify an associated heavy chain, such as IgG or IgA. Free light chains in urine have no attached heavy chain.

A monoclonal result does not, by itself, show which condition is responsible or how serious it is. Some monoclonal proteins are associated with conditions that need observation rather than

immediate treatment. Others require more investigation.

A broad or mixed pattern may be described as polyclonal. This means the proteins come from many groups of antibody-producing cells rather than one identical group.

Immunofixation is mainly a test of protein identity. If your report includes an amount, that measurement may come from urine protein electrophoresis or another urine protein test. Ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines, kidney function and clinical context.

What affects the results

The result can be misleading even when the laboratory performs the test correctly.

An incomplete 24-hour collection can make the total amount of protein appear lower than it really is. Collecting for longer than instructed can make it appear higher.

Hydration affects how concentrated your urine is. A very dilute spot sample may contain too little monoclonal protein to detect. Dehydration can make proteins appear more concentrated, although it does not create a truly monoclonal protein.

Kidney function has an important effect. The kidneys filter and reabsorb light chains, so changes in kidney function can alter how much reaches the urine. A person may have an abnormal protein in the blood without passing enough into urine for detection.

Other factors include:

Age and pregnancy can affect general urine protein findings, but they do not usually create a clear monoclonal band by themselves. Recent transfusion is more likely to affect blood protein studies than urine immunofixation, but it should still be mentioned when results are being interpreted.

- Protein release that changes from one day to another
- Blood, heavy inflammation or contamination in the urine
- Delayed delivery or incorrect sample storage
- Treatment that lowers the amount of monoclonal protein
- Intravenous immunoglobulin or antibody-based medicines that complicate protein patterns

Accuracy and limitations

Urine immunofixation is good at confirming and typing a monoclonal protein that is present in the submitted urine at a detectable level. It can find smaller amounts than urine protein electrophoresis alone.

It can still miss a monoclonal protein. This may happen when the urine is dilute, the protein amount is very low, release is intermittent, the kidneys do not excrete much of it or the collection is incomplete. A negative result therefore cannot always rule out a plasma cell condition.

The test can occasionally produce a pattern that looks restricted but is not evidence of a single persistent abnormal cell group. Mixed immune responses, specimen contamination and some treatments can create unclear or temporary bands. Repeat testing or comparison with earlier samples may clarify the finding.

Blood tests are often better for detecting proteins that remain mainly in the bloodstream. Serum protein electrophoresis, serum immunofixation and serum free light-chain testing provide different information and are commonly interpreted together. Urine immunofixation remains useful when urinary light chains or light-chain amyloidosis are a particular concern.

No single protein test should be used alone to confirm or exclude myeloma or a related disorder.

Risks and complications

Providing a urine sample is non-invasive and has no direct medical risk. The main inconvenience is collecting and storing every sample correctly during a 24-hour collection.

What happens next

A negative result may need no further action if the original concern was low and related tests are reassuring. If concern remains, your clinician may compare it with serum immunofixation, serum free light chains, kidney tests, blood counts and calcium levels.

A newly detected monoclonal protein usually leads to routine follow-up rather than emergency treatment based on the result alone. Follow-up may include repeat blood or urine testing and, in some situations, referral to a haematologist, a specialist in blood conditions.

Contact your healthcare service promptly if you have symptoms such as a major reduction in urine, worsening swelling, persistent vomiting or new marked weakness. Seek emergency care for severe breathing difficulty, chest pain, fainting or new confusion. These symptoms require assessment regardless of the immunofixation result.

Common questions

Can I drink coffee before the test?

Yes. Fasting is not normally required, so coffee is usually allowed. Avoid deliberately drinking much more or much less fluid than usual because very dilute or concentrated urine can affect detection.

Does the time of day matter?

Usually not for a 24-hour collection because it includes a full day. For a spot sample, follow the laboratory's timing instructions; an early-morning sample may be more concentrated.

Can I exercise beforehand?

Ordinary activity is usually acceptable. Strenuous exercise can temporarily increase general urine protein, so mention recent intense exercise if the result is unexpected.

What if I miss one sample during a 24-hour collection?

Tell the laboratory. Missing one collection can make the measured daily protein amount inaccurate, and you may need to start again with a new container.

Can my period affect the result?

Menstrual blood can contaminate a urine sample and complicate interpretation. If possible, ask whether the collection should be delayed. If it cannot be delayed, tell the laboratory.

Does a positive result mean I have multiple myeloma?

No. It means a monoclonal protein was detected in that sample. Other blood tests, your health history and sometimes imaging or biopsy are needed to determine the cause.

Sources

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