TEST

Skin lesion KOH exam

A skin lesion KOH exam checks scraped skin scales for signs of a fungal infection.

WHAT IT MEASURES
Fungal cells and filaments in scraped skin scales

SAMPLE
Skin scales scraped from the lesion

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 5 to 10 minutes

RESULTS IN
Same day to several days, depending on laboratory

USED FOR
Helping diagnose superficial fungal skin infections

MAIN LIMITATION
Poor sampling can miss fungus that is present

Overview

A skin lesion KOH exam is a quick microscope test for fungus in the outer layers of the skin. It may be used when a rash could be caused by a dermatophyte, the group of fungi responsible for infections commonly called ringworm, athlete's foot, or jock itch. It can also help detect some yeast infections.

KOH stands for potassium hydroxide. During the test, a healthcare professional gently scrapes scales from the affected skin. The sample is placed on a microscope slide with potassium hydroxide solution.

The solution clears away many skin cells while leaving fungal structures easier to see. The person examining the slide looks for fungal filaments, called hyphae, or forms of yeast.

This is not a blood test, and it does not measure a number against a reference range. Results are usually reported as fungal elements seen or not seen.

Why the test is ordered

Many fungal rashes can resemble eczema, psoriasis, contact dermatitis, and other skin conditions. Appearance alone may not always identify the cause.

A KOH exam may be ordered to:

The test may also be used on material from hair or nails. However, nail and scalp infections can be harder to confirm and may need fungal culture, molecular testing, or other laboratory methods.

- Check whether a scaly, itchy, or ring-shaped rash contains fungus
- Help distinguish a fungal infection from a nonfungal skin condition
- Confirm an uncertain diagnosis before treatment
- Investigate a rash that has not improved as expected
- Guide whether fungal culture or another test is needed

Who should have the test

The test may be useful if you have a skin lesion that looks fungal but cannot be identified confidently from its appearance. Examples include peeling skin between the toes, a rash with a raised scaly border, or an itchy rash in a skin fold.

Testing can be especially helpful when the rash is unusual, has been partly treated, keeps returning, or could have another cause. It is not normally used to screen people without a skin concern.

Whether you need the test depends on the lesion's location, appearance, previous treatment, and your overall health. Some typical fungal rashes are treated without laboratory testing, while others need confirmation.

How to prepare

You do not need to fast. You can eat, drink coffee, take routine exercise, and have the test at any time of day.

Ask the clinic whether you should avoid putting creams, powders, oils, or makeup on the area before your appointment. These products can coat the scales and make a useful sample harder to collect.

Tell the healthcare professional about antifungal like fluconazole or terbinafine creams, tablets, medicated shampoos, and steroid like prednisone or hydrocortisone creams you have

recently used. Antifungal treatment may reduce the amount of fungus available for testing. Steroids can change how a fungal rash looks.

Do not stop a prescribed medicine unless the clinician who manages it tells you to do so. If the lesion involves a nail, follow any instructions about removing nail polish or artificial nail material.

What happens during the test

The healthcare professional first examines the lesion and chooses where to collect the sample. For many ring-shaped rashes, the active, scaly outer edge is more useful than the clearer centre.

A sterile blade, glass slide, or small scraping tool is gently moved across the skin. Loose scales fall onto a slide or into a specimen container. If hair is involved, a few affected hairs may be plucked or clipped.

Potassium hydroxide solution is added to the sample. The slide may be warmed gently or left for a short time so the skin material clears. It is then examined under a microscope.

Collection usually takes only a few minutes. If microscopy is available in the clinic, a result may be ready during the same visit. Samples sent to a laboratory take longer.

Understanding your results

A positive result means fungal structures were seen in the sample. Long, branching filaments can support a dermatophyte infection. Yeast cells or short chains called pseudohyphae may suggest a yeast-related condition.

A positive test should still be interpreted with the lesion's appearance and location. KOH microscopy usually cannot identify the exact fungal species. It also cannot reliably show whether fungal material is alive.

A negative result means no fungal structures were seen. This makes a fungal cause less likely, but it does not completely rule one out. The sample may have contained too little material, come from the wrong part of the lesion, or been collected after antifungal treatment.

There is no universal numerical reference range. Reporting and interpretation vary by laboratory, sample site, age, medicines, pregnancy status, and clinical context.

What affects the results

The quality and location of the sample have the greatest effect on this test. Fungus may be unevenly distributed across a lesion.

Factors that can make fungus harder to find include:

Dead fungal structures can sometimes remain visible after treatment. A positive result therefore does not always prove that a living infection is still active.

Fibres, air bubbles, fat droplets, and damaged skin or hair can resemble fungal structures. An experienced examiner is less likely to mistake these for fungus.

Food, coffee, exercise, time of day, kidney function, pregnancy, and a recent blood transfusion do not usually affect the result directly. Medicines placed on the lesion, especially antifungals, are more relevant.

- Scraping the clear centre instead of an active scaly edge
- Collecting too little skin material
- Sampling skin that is not currently scaling
- Recent use of topical or oral antifungal medicine
- Creams, oils, powders, or cosmetics coating the skin
- Delays or problems while preparing the microscope slide

Accuracy and limitations

A KOH exam can provide a useful answer quickly, but there is no single miss rate that applies to every setting. Accuracy changes with the body site, fungal burden, collection technique, slide preparation, and examiner experience.

The test can miss a fungal infection when few organisms are present or the sample comes from an unhelpful area. Nail, scalp, and partly treated infections may be particularly difficult to detect with one scraping.

A false positive is less common but can occur when fibres or other material are mistaken for fungal filaments. Yeast found on the skin may also represent harmless colonization rather than the cause of the lesion.

KOH microscopy does not usually identify the exact species. Fungal culture may be better when species identification matters, although culture takes longer and can also miss infections. Molecular tests can detect fungal genetic material and may be useful in selected cases, but availability differs between laboratories.

If repeated testing is negative and the lesion remains unexplained, a skin biopsy or testing for another condition may be more informative.

Risks and complications

Skin scraping is a low-risk procedure. You may feel mild scratching or brief discomfort, and the area can occasionally have a tiny spot of bleeding.

Hair plucking may sting. Significant bleeding, infection, or scarring from routine collection is uncommon.

What happens next

If fungus is seen, your healthcare professional will interpret the finding alongside the location and extent of the rash. Treatment options differ for small skin lesions, scalp involvement, nail disease, and widespread infection.

If the result is negative but a fungal cause is still suspected, routine follow-up may include another scraping from a different area, fungal culture, molecular testing, or a skin biopsy. The lesion may also be assessed for nonfungal causes such as eczema, psoriasis, or contact dermatitis.

Arrange routine follow-up if the rash persists, spreads slowly, returns after treatment, or your symptoms do not match the result.

Seek urgent medical care for rapidly spreading redness with fever, severe pain, skin around the eye becoming involved, or extensive blistering or peeling. Call emergency services for trouble breathing, fainting, or swelling of the face or tongue, including after starting a medicine.

Common questions

Can I drink coffee before a skin lesion KOH exam?

Yes. Coffee, food, and other drinks do not affect the test. No fasting is needed.

Does the time of day matter?

No. The sample can be collected at any time. Recent skin products or antifungal treatment matter more than the appointment time.

Can I exercise beforehand?

Yes. Exercise does not change fungal structures in the skin. If sweating leaves the area wet or covered in products, gently follow the clinic's preparation instructions.

Does the scraping hurt?

Most people feel only light scratching. Inflamed, cracked, or broken skin may be more sensitive, and collecting affected hairs can briefly sting.

Can I have the test after using antifungal cream?

Yes, but tell the healthcare professional what you used and when. Antifungal treatment can reduce the amount of fungus in the sample and may contribute to a negative result.

Will I get the result immediately?

Sometimes. Clinics with on-site microscopy may provide a result during the visit. A sample sent to a laboratory may take several days.

Sources

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