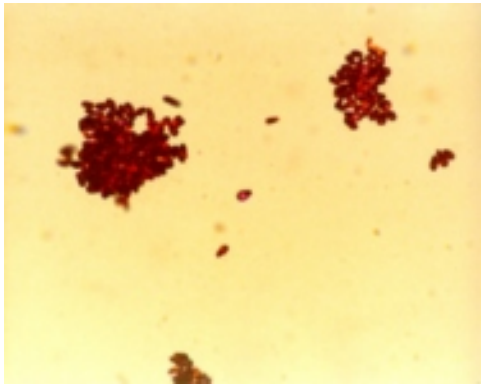


Yeast Infection of the Skin

YEAST DERMATITIS (MALASSEZIA INFECTION)

Yeasts are the spore-like forms of fungi (as shown in the photomicrograph on the right). *Malassezia dermatitis* is the inflammatory skin disease that results from overgrowth on the skin by the natural *Malassezia* yeast population.



The dark footprint-like structures seen here are the yeast organisms: Malassezia pachydermatis



Note the "elephant skin" appearance that is especially common with Malassezia dermatitis. The more scientific term for this finding is "lichenification."

WHY SUSPECT YEAST?

Yeast infections are especially itchy, crusty, and smelly. Often a dog starts with a rash or with simple itching but the skin thickens to an "elephant" skin appearance. The itch is extreme and the odor can be especially troublesome. Parts of the body or the entire body can be affected. *Malassezia* overgrowth is particularly problematic where there are skin folds ("armpits," eyelids, facial folds, lip folds, throat latch, and especially between the toes). Mostly dogs are affected but cats can get yeast infections as well.

WHERE WOULD A DOG GET A YEAST INFECTION?

Yeast happily live on most normal skin as well as in ears and anal glands. To get a yeast infection or overgrowth, conditions on the skin surface have to change to favor the proliferation of the yeasts. Skin oil quality changes, environmental moisture, damage to the skin and other factors promote an overgrowth of the normal yeast populations. *Malassezia* yeasts release very inflammatory surface proteins which do not cause trouble in small quantities but in larger amounts will trigger a large immune response. Further, large numbers of *Malassezia* yeasts will form what is called a "biofilm." This is a matrix connecting a large group of yeasts, helping them attach to the skin and evade the immune system. The biofilm also presents a barrier to medications that might kill the yeasts. Worse still, it is also possible for a pet to actually become allergic to the proteins in the yeast cell wall (see below) so that very few yeast organisms are needed to incite very big inflammation.



This dog's skin also shows lichenification along with redness from active inflammation.

Most commonly yeast overgrowth results when the skin is responding to allergy. This will alter the oil production and water content of the skin and change the barrier function of the skin to allow for yeast overgrowth. Hormone imbalances such as hypothyroidism also can alter the skin barrier so that yeast proliferate. There is usually an underlying skin issue that started the yeast infection and yeast infections will likely be a recurrent problem if the underlying skin issue is not controlled.

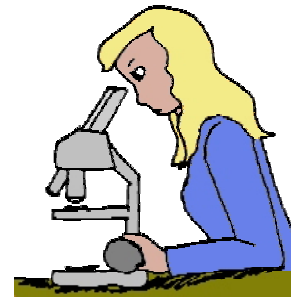
Malassezia infections are not contagious.

The following breeds are predisposed genetically to yeast infections: the West Highland White Terrier, Basset hound, Cocker spaniel, Silky terrier, Australian terrier, Maltese, Chihuahua, Poodle, Shetland sheepdog, Lhasa apso, and the Dachshund.

HOW IS YEAST INFECTION/OVERGROWTH CONFIRMED?

There are several testing methods to confirm the overgrowth of yeasts:

- Impression smear (pressing a microscope slide on the skin to collect yeast organisms)
- Scotch tape sampling (pressing a piece of clear tape to the skin to collect yeast organisms)
- Skin scraping with a blade (scraping the skin with a blade to collect yeast organisms)
- Cotton swab (rubbing a moistened Q-tip on the skin to collect yeast organisms)
- Skin Biopsy (removing a small plug of skin with a biopsy punch with a local anesthetic. This is the most invasive choice but provides substantially more diagnostic information)



Very few yeasts need to be seen under the microscope to confirm yeast infection.

A special situation is worth mentioning: *Malassezia* hypersensitivity. In this situation, the patient actually becomes allergic to the fungus so that very small numbers of organism on the skin generate an extreme itch reaction. This scenario is confirmed by an injection test where an extract of yeast is injected into the skin and the swelling is compared to swelling generated by histamine (a very inflammatory positive control) and to that generated by saline (a completely non-inflammatory negative control). Animals that are hypersensitive to yeast in this way will need allergen specific immunotherapy (allergy shots) to reduce their sensitivity.



HOW DO WE GET RID OF IT?

Treatment can be topical, oral, or both. Topical treatment is best used for localized spots of infection while oral medication would be better applied to larger infected areas. If the yeast infection is recurrent or if one wishes to supplement oral medication, topical and oral treatment can be combined.

Oral therapy: Ketoconazole and its derivatives (the so-called "azole" class of antifungal drugs) rule when it comes to oral therapy. Typically a several week treatment is needed and there are numerous protocols involving different dosing schedules. Higher doses tend to be needed if recurrence is a problem. The extreme itch usually improves or resolves within one week. For animals that do not tolerate the azole class of medications, is a good alternative choice. If oral medications are not effective, this suggests a biofilm has formed and topical treatment must be included in the regimen.

Shampoos: There numerous available medicated shampoo products for veterinary patients on the market at any given time and new products are constantly being developed. Because there are so many products coming and going, we will limit our discussion to active ingredients rather than brand names.

While degreasing shampoos such as the benzoyl peroxide and sulfur/salicylate shampoos will help remove the skin oils feeding the yeast, there are shampoos that are specifically anti-yeast. We prefer the 4% chlorhexidine shampoos or Malaseb® shampoo as these both strip skin oil and kill yeast; however, other anti-yeast products include those containing selenium, vinegar, miconazole, ketoconazole and more. The pet must be bathed twice a week to start and the shampoo requires a 10 minute contact time (meaning do not rinse the lather for 10 minutes).

Spot Treatments: If only a small area is involved, it is probably not necessary to bathe the entire animal. Special acetic acid wipes can be used to cleanse the affected area. Mixtures of vinegar and water can be used but the pet will develop a distinct vinegar odor.

Treatment of the Underlying Cause: It is important to realize that yeast overgrowth occurs in response to a primary problem be it allergy, seborrhea or something else. If the underlying problem is not controlled, yeast dermatitis is likely to periodically recur. It is common for allergic dogs to require some kind of periodic if not on-going anti-yeast therapy.

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