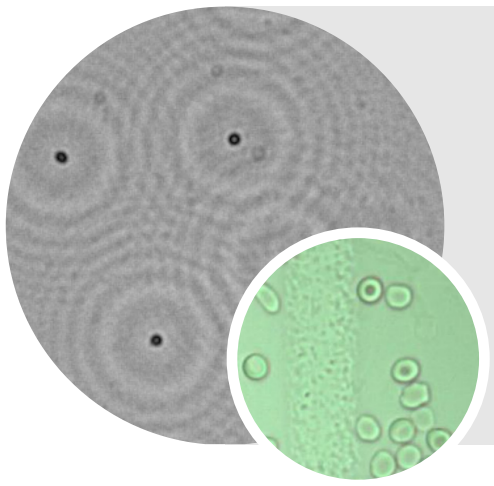
Urine Microscopy

Microscopic examination of urine is one of the most often performed and valued tests in veterinary diagnostics. It is carried out to screen for and monitor diseases and conditions such as urinary tract infections or kidney disorders within animals.

Components of Urine

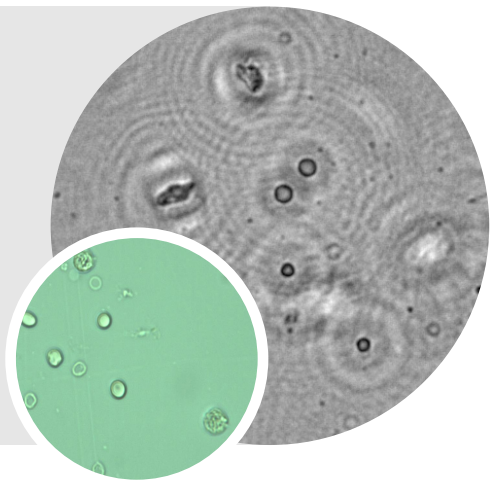


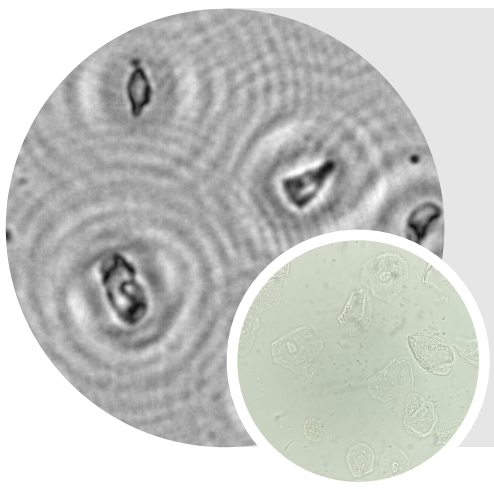
Red Blood Cells

Finding an increased amount of RBCs in urine suggests bleeding somewhere in the urinary tract. This bleeding could be due to bladder stones, infections, coagulation disorders, trauma, or cancer.[2]

White Blood Cells

Increased WBCs in the urine, known as pyuria, suggest an active immune response and can indicate a urinary tract infection, inflammation, or the presence of cancer cells. [2][3]



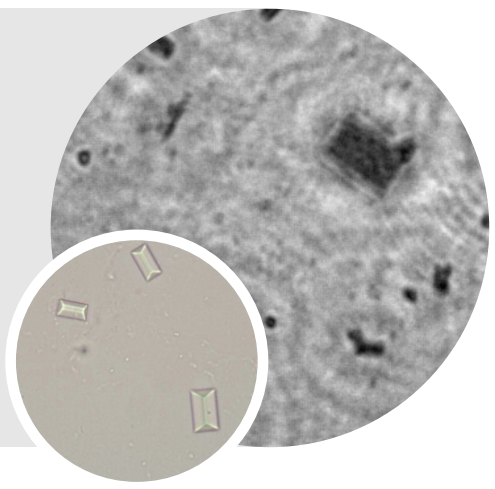


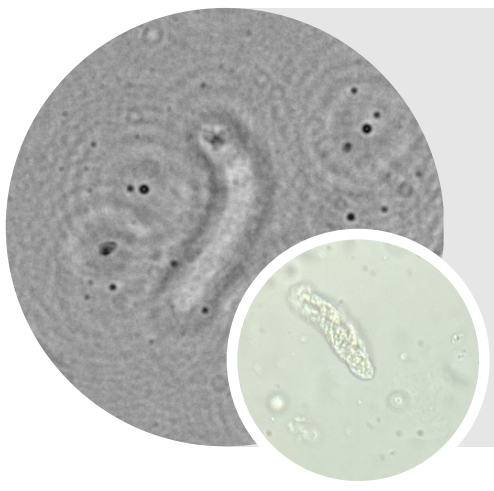
Epithelial Cells

Squamous epithelial cells in urine often indicate sample contamination. Increased non-squamous (transitional/renal) cells may suggest urinary tract inflammation, infection, kidney stones, or renal tubular disease. [2] [3]

Crystals

Struvite crystals (shown on the picture) in urine can lead to the formation of struvite stones, particularly in alkaline urine. Calcium oxalate dihydrate crystals may indicate ethylene glycol poisoning or oxalate stones. [1]



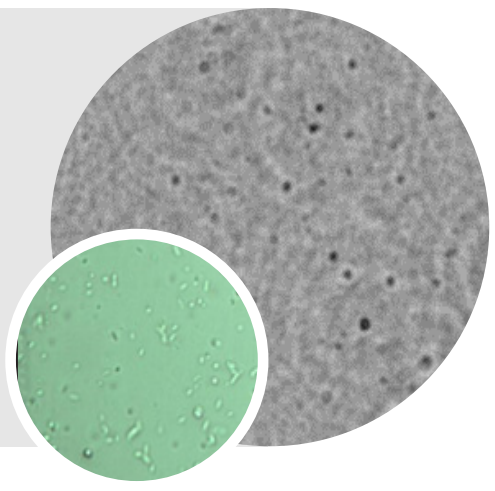


Casts

A few hyaline casts might be found in urine due to dehydration, but can also indicate a renal disease. The presence of non-hyaline casts (cellular or granular) suggest renal conditions such as glomerulonephritis or pyelonephritis. [1] [2] [3]

Bacteria

Significant bacteriuria often coincides with pyuria and symptoms like dysuria, frequent urination, and urgency. Persistent or recurrent bacteriuria requires investigation for underlying causes such as urinary tract obstructions, bladder stones, or compromised immunity. [2][3]



Pro Tip: Enhance your cell analysis by using the vet fluidlab 1 slide under the microscope for even more detailed insights!

[1] Rizzi, T. (2014, May). Urinalysis in Companion Animals, Part 2: Evaluation of Urine Chemistry & Sediment. Retrieved from Today's Veterinary Practice: https://todaysveterinarypractice.com/clinical-pathology/urinalysis-in-companion-animals-part-2-evaluation-of-urine-chemistry-sediment/
[2] Williams, K., Ruotsalo, K., & Tant, M. S. (2024, 05 22). Urinalysis - vca animal hostpitals. Retrieved from vca animal hospitals: https://vcahospitals.com/know-your-pet/urinalysis
[3] Yadav, S. N., Ahmed, N., Nath, A. J., Mahanta, D., & Kalita, M. K. (2020). Urinalysis in dog and cat: A review. Veterinary World, 2133–2141.