

CADET[®] BRAF urine test

SAMPLE REQUIRED:

Free catch urine collected into a special preservative container

Background

- 85% of canine transitional cell (urothelial) carcinomas (TCC/UC) carry a mutation in the BRAF gene
- This mutation may be detected in a urine sample containing as few as 10 mutant-bearing cells
- 15% of canine TCC/UC lack BRAF mutation. More than two thirds of these have other genomic signatures detectable by a second level test (BRAFF-PLUS). See also Notes below.
- The overall **sensitivity** to detect canine TCC/UC is therefore > 95%.
- **Specificity** of both BRAF and BRAFF-PLUS tests is ~ 100%.
 - The BRAF mutation has not been detected in non-neoplastic bladder lesions, including benign polyps and cystitis
 - The test is not impacted by the presence of blood, protein, glucose or bacteria in urine, or by drug therapy (including antibiotics and NSAIDS).

Indications

- Any dog with:
 - Unexplained bladder wall change on ultrasound examination (especially broad-based mass-like lesion)
- Dogs over 6 years old with:
 - Undiagnosed cause of lower urinary tract disease (e.g. haematuria, dysuria, stranguria, pollakiuria, incontinence)
 - Non-resolved urinary tract infection after appropriate antibiotic treatment
 - As a screening test in high-risk breeds.
- During chemotherapy for TCC/UC to monitor treatment success via decreased levels of BRAF mutation, or to monitor for relapse by detection of BRAF mutation-bearing cells.

Collection protocol

- **Urine must be collected into a special preservative solution**
- To obtain a test kit please call the laboratory and request a CADET[®] BRAF urine collection kit.
- The test kit consists of:
 - Urine sample jar containing preservative
 - Antech instruction sheet for owner (or veterinarian) regarding collection
 - Antech checklist form for veterinarian to complete
 - "ASAP BRAF Instructions for Veterinarian" slip stapled to Antech checklist form. These instructions will include what information to write on the Antech checklist form and what to submit to ASAP laboratory.
- The required sample is 40 mL **free-catch (voided)** urine
 - A smaller volume of urine (10-25 mL) may be submitted though the sensitivity may be decreased (this

is less likely to be a problem if a bladder mass can be visualised)

- A smaller volume may also limit option of the second level BRAF-PLUS test, if required (see above and below)

- Urine collected by cystocentesis or catheterisation is NOT recommended since the sensitivity may be decreased.

- Urine should first be collected into a clean, dry container and transferred into the preservative within 15 minutes of collection
- Once in the preservative, urine is stable for several days at room temperature when kept out of direct sunlight
- Short periods of refrigeration should not affect the specimen but refrigeration is not necessary
- Urine collection may take place over 2-3 days as long as each aliquot is promptly placed into the preservative solution and stored out of direct sunlight.

Notes

- ASAP Laboratory prepares cytocentrifuge smears from the submitted urine. These smears are sent to the USA for testing.
- If the submitted sample does not have detectable BRAF mutation, the BRAF-PLUS test for other relevant genomic signatures (see above) will automatically be performed at no additional charge. However, because more DNA is required to perform the BRAF-PLUS assay, a small number of samples that are BRAF-undetected will not be eligible for the BRAF-PLUS assay, and a new urine sample must be submitted (which will incur a second charge).
- When a mass is detected, histologic confirmation of TCC/UC is recommended which may also indicate whether the mass has invaded the muscle wall. Further imaging and evaluation of local lymph nodes should be performed to stage the disease.

Reference

<https://www.antechdiagnostics.com/laboratory-diagnostics/molecular-diagnostics/cadet-braf-plus>