

**“Fido is eating, drinking, and peeing a lot. Does he need an adrenal panel?”**

Veterinarians may run across patients who fit the profile of a Cushingoid animal (including increased thirst, urination, appetite, hair loss, panting, pot-belly) but find that the standard screening tests for hyperadrenocorticism (ACTH stimulation test, dexamethasone suppression test) are within normal limits or are inconclusive. This pattern may exist for years with a patient not doing well and no definitive test results. The animal may suffer from a grab-bag of suggestive clinical signs/symptoms without relief despite the best efforts of his/her veterinarian. Dr. Jack Oliver, the former Director of the Clinical Endocrinology Service at the University of Tennessee Veterinary Medical College, developed the adrenal panel as another screening test for hyperadrenocorticism however this test evaluates 6 adrenal steroids versus just 1 as in the ACTH stimulation test and dexamethasone suppression test. Our laboratory utilizes both radioimmunoassay and chemiluminescent methodologies and has established baseline and ACTH stimulation reference intervals for dogs and cats. Baseline adrenal panels are also offered for ferrets and rabbits. In animals with a suggestive history of hyperadrenocorticism, the adrenal panel testing evaluates the potential of aberrant hormonal responses. An interpretation of the results is standard, and consultations for veterinarians are available with Drs. Fecteau, Giori, and Eiler.

Veterinarians/veterinary staff can contact the lab at 865-974-5638 or at [endocrinology@utk.edu](mailto:endocrinology@utk.edu) with questions.

Adrenal panels:

Canine and feline adrenal panel (baseline & post-ACTH samples)

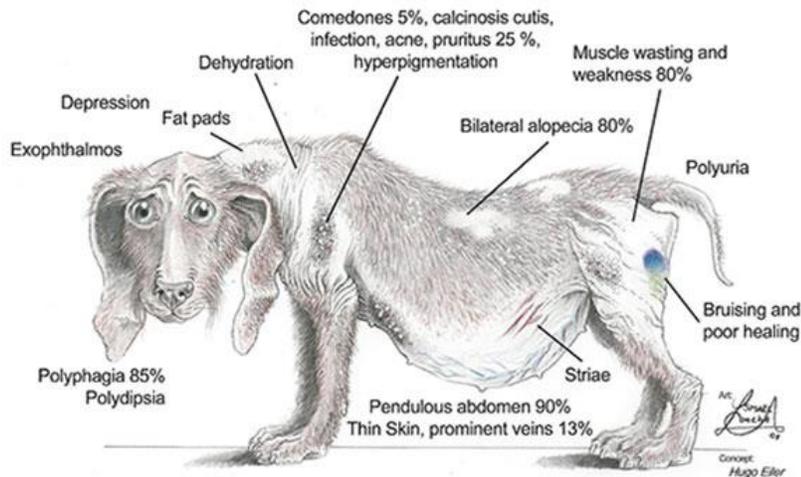
Canine combined dexamethasone suppression/ACTH stimulation adrenal panel

Ferret adrenal panel (baseline sample only)

Rabbit adrenal panel (baseline sample only)

Please see our website ([www.vet.utk.edu/diagnostic/endocrinology](http://www.vet.utk.edu/diagnostic/endocrinology)) for a description of each test and a list of tests available.

**Biomedical & Diagnostic Sciences**



## Cushing's Syndrome

Below are what typical adrenal panel cases might look like. These are real patients, however the names have been changed:

Dillie Johns is an 11 year old spayed female Beagle. She presented to her veterinarian with a six month history of decreasing activity, increased panting and urine accidents in the house. Bloodwork revealed an elevation in liver values and proteinuria. Further testing revealed vacuolar hepatopathy and a NORMAL ACTH stimulation test and a NORMAL dexamethasone suppression test. At this point, an adrenal panel through the Endocrinology Service at the University of Tennessee was recommended. The adrenal panel results and comments by our doctors are below:

Endocrinology Lab Case # **EN 17-001**

Pet's Name: Dillie, FS, Beagle, 11 yr

Owner's Name: Johns

TEST	RESULT (Baseline)	Normal Range**  Baseline	RESULT (Post ACTH)	Normal Range**  Post-ACTH
Cortisol µg/dL	6.6*	<1.0-5.9	19.3*	6.5-17.5
Androstenedione ng/ml	0.51	0.05-0.57	3.91	0.27-3.97
Estradiol pg/ml	117.5*	30.8-69.9	122.1*	27.9-69.2
Progesterone ng/ml	<0.20	<0.20-0.49	1.45	<0.2-1.50
17 OH Progesterone ng/ml	0.31	0.08-0.77	4.64*	0.40-1.62
Testosterone ng/dL	<15.0	<15.0-32.0	<15.0	<15.0-45.0

\* Above or below reference range

\*\*Mean normal range values for female spayed dogs; QNS=Insufficient Sample.

These results: [X] indicate presence of increased adrenal activity. (Marginal)

[ ] indicate presence of adrenal hypofunction.

[ ] are within normal limits.

History: decreasing activity; panting; urine accident in the house; proteinuria (> UPC) and > liv enz.; vacuolar hepatopathy; previous LDDST and ACTH test WNL.

Comments: cortisol and estradiol concentrations are altered as indicated (\*) in both columns. Post-ACTH 17OHP concentration is also elevated. Deviations from reference range vary from marginal (grey zone for cortisol) to significant (17OHP). Occasionally, marginal elevation in baseline cortisol concentration may be related, in part, to testing stress. Although estradiol may contribute to clinical signs, it is not a good indicator of adrenal activity, since estradiol may be secreted also by peripheral tissues (adipose, skin). In this case the source is not known. Various treatment options are attached for your consideration, if signs of hyperadrenocorticism and no other concurrent non-adrenal illnesses are present. Some veterinarians tentatively consider the use of items 2-4 combined (on attached sheet), if symptomatic for hyperadrenocorticism.

Cats can also suffer from adrenal disease too, but may have a different presentation from our canine friends.

Endocrinology Lab Case # **EN 17-002**

Pet's Name: Jerry, MC, DLH, 15 yr.

Owner's Name: Tibbs

TEST	RESULT (Baseline)	Normal Range**  Baseline	RESULT (Post ACTH)		Normal Range**  Post-ACTH
			30min	1hr	
Cortisol µg/dL	<1.0	<1.0-5.9	2.6	*3.7	5.3-15.0
Androstenedione ng/ml	0.21	0.1-0.6	0.39	0.58	0.4-2.0
Estradiol pg/ml	43.5	39.1-89.3	30.9	41.6	41.8-79.7
Progesterone ng/ml	3.93*	<0.2-0.7	7.54	12.0*	0.5-5.2
17 OH Progesterone ng/ml	0.20	0.08-0.3	0.36	0.65	0.2-1.6
Testosterone ng/dL	<15.0	<15.0-50.0	<15.0	<15.0	<15.0-40.0
Aldosterone (pg/ml)	2358.6*	3.3-261.3	3246.1	3596.4*	38.8-474.5

\* Above or below reference range

\*\*Reference intervals for castrated male cats; QNS=Insufficient Sample

These results: [X] indicate presence of increased adrenal activity.

[ ] indicate presence of adrenal hypofunction.

[ ] are within normal limits.

Note: Aldosterone analysis was added to the adrenal panel

History: generalized weakness, hyperglycemia, hypokalemia, AUS showed adrenal tumor

Comments: Progesterone and aldosterone concentrations are increased and their elevations are significant. Elevated aldosterone is likely related to Jerry's hypokalemia. Various treatment options for dogs are attached for your consideration if clinical signs of hyperadrenocorticism are present.