

# Thyroid Tests in Dogs and Cats

There are a range of diagnostic options for evaluation thyroid function in dogs and cats.

## Thyroxine (Total T4)

Serum thyroxine is a common screening test in the evaluation of thyroid function.

### Dogs

In dogs, total T4 (TT4) concentration within the reference interval usually excludes hypothyroidism. Rarely, increased TT4 is identified in dogs with clinical history strongly supporting hypothyroidism. In some breeds, this can be associated with anti-thyroglobulin antibodies. In such cases, cTSH and free T4 by equilibrium dialysis +/- evaluation of anti-thyroglobulin antibodies will usually allow diagnosis.

Dogs can have total T4 values below the reference interval with hypothyroidism, suppression by a range of medications (including corticosteroids and anti-convulsant therapy) or with euthyroid sick syndrome. Thus it is important to evaluate low, especially mildly low, total T4 results against the age, breed, clinical presentation, haematology and serum biochemistry results when considering if additional testing is indicated.

Serum thyroxine can also be tested in the rare situation of suspected canine hyperthyroidism. Increased TT4 is diagnostic for this unusual condition. Occasionally, normal dogs will have total T4 concentrations above the reference interval, especially younger animals.

### Cats

In cats, an increased TT4 concentration is consistent with hyperthyroidism. Early in the disease, many cats have variable TT4, so high normal results should not exclude hyperthyroidism in a cat with supportive clinical signs. In such cases, repeating the TT4 in 2-4 weeks may be diagnostic.

Decreased TT4 in cats may be due to excessive response to therapy for hyperthyroidism, euthyroid sick syndrome or spontaneous hypothyroidism. The latter has formerly been regarded as rare but is being increasingly recognised in cats. Hypothyroidism in cats may have subtle presenting signs and is not necessarily accompanied by the haematologic or biochemical abnormalities seen in canine hypothyroidism.

### Treatment

Total T4 is the assay of choice for monitoring therapy for hypothyroidism or hyperthyroidism. Samples from dogs on thyroid supplementation should be taken 6h after oral thyroxine administration, it is important to include the time post therapy that the sample was collected.

## Canine TSH (cTSH)

Increased cTSH in a dog with suspected hypothyroidism supports the diagnosis. Approximately 70% of hypothyroid dogs will have an increased cTSH. TSH has also been used in the assessment of feline hypothyroidism and is also occasionally assessed in equivocal cases of feline hyperthyroidism.

## Free T4 by Equilibrium Dialysis

Free T4 (fT4) by equilibrium dialysis is the gold standard for measurement of fT4 and Vetnostics do not recommend other fT4 assays. The sample must be sent overseas so there is a delay in result reporting. The combination of TT4, fT4 and cTSH is considered to be the gold standard for the diagnosis of canine hypothyroidism. Free T4 testing is also sometimes used in the diagnosis of hyperthyroidism (and hypothyroidism) in cats.