# Clinical and Laboratory Evaluation of the Abaxis Total T4 and Cholesterol Assays

Shanon M. Zabolotzky, DVM[a], Carlyle L. Hass, ASCP, CLS[a], Mary M. Christopher, DVM, PhD, Diplomate ACVP[a]

## Objective

To evaluate the statistical and clinical correlation of Total T4 and Cholesterol assays performed on the VetScan 2 (VS2)[b] analyzer in comparison to a standard reference method.

## Design

Method Comparison

## Sample Population

67 samples from ill canine and feline patients presented to the University of California – Davis School of Veterinary Medicine.
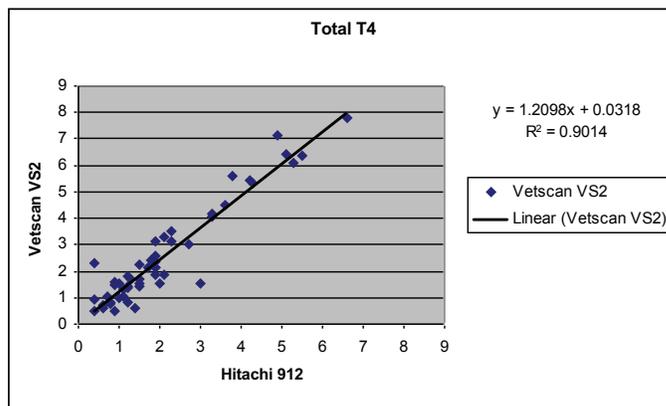
## Procedure

Samples were evaluated in singlet on the Hitachi 912/917 analyzers and in duplicate on the VS2 analyzer using the T4/Cholesterol Profile. Samples from patients where insufficient samples were obtained to run tests on both analyzers were not utilized and samples where results were suppressed due to internal quality control checks (iQC) from the VS2 were not utilized. Results were compared using linear regression and evaluating clinical concordance utilizing method specific reference intervals.

## Results

Results were obtained for 67 patients. 17 of these patients had results that were outside the linear range of one or both of the analyzers and these results were not included in the statistical analysis for determination of correlation coefficients or linearity. However, these values were clinically relevant and would be reported to the veterinarian. Therefore they were used in evaluation of the clinical comparisons. Values and graphical analysis for the correlation coefficient ($R^2$), slope and Y intercept are shown in the following table:

|            | # of Patients | $R^2$ | Slope | Y Intercept |
|------------|---------------|-------|-------|-------------|
| Total T4   | 67            | 0.90  | 1.21  | 0.03        |
| Cholesterol| 59            | 0.98  | 0.93  | 26.18       |



**Cholesterol**

$y = 0.9336x + 26.182$
$R^2 = 0.9828$



**Total T4**

$y = 1.2098x + 0.0318$
$R^2 = 0.9014$

## Clinical Interpretation

Four of 23 (17.3%) feline cases were discordant for Total T4 with the university reference method but 0 of 24 (0%) had a differing clinical interpretation. In each case, the discordant value was for a below normal Total T4. As these were clinically ill patients, a diagnosis of sick euthyroid syndrome would likely have been made rather than a diagnosis of feline hypothyroid disease.

Seven of 44 (15.9%) canine cases had discordant values but only 2 of 44 (5%) would have potentially had a different clinical interpretation. Of those dogs with discordant values, four had other laboratory evidence of significant disease that could cause a sick euthyroid state and would not have affected interpretation. One dog had only a mild decrease in total T4, which may have been normal for that patient. Two dogs (one with no other significant laboratory abnormalities and one with a high value) would likely have undergone further testing for thyroid disease.

18 of 59 patients (30.5%) had discordant results for cholesterol. Most were high on the Vetscan VS2 with values within reference on the Hitachi. None of these results were likely significant enough to alter diagnosis or treatment.

## Conclusion

The Abaxis Total T4 and Cholesterol Assays show excellent statistical agreement with the university method. There was minimal proportional error between the methods. In addition, clinical agreement (concordance) was excellent for both analytes. The study shows the Vetscan VS2 to be an excellent point-of-care, in-office analyzer for evaluation of Total T4 and Cholesterol in dogs and cats.

**Citations:**

[a] Department of Pathology, Microbiology and Immunology School of Veterinary Medicine University of California Davis, CA 95616

[b] Abaxis Inc. 3240 Whipple Rd. Union City, CA 94587