

## Technical Bulletin

*Detailed information concerning methodology, specimen requirements, and reference ranges on new and specialized tests*

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- Test Name: THCA-Creatinine Ratio
  - Related Test Codes: 2545 – Cannabinoids / 9044 - Creatinine
  - Department: Toxicology (700)
  - Testing Schedule: Monday, Wednesday, Friday, 3-5 days for results.
  - Specimen Requirement: Urine at ambient temperature
  - Methodology: Gas Chromatography / Mass Spectrometry
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### **Background Information:**

Diagnosis and treatment of marijuana use is complicated by long detection times for the primary psychoactive compound in marijuana, THC. THC is stored in body fat and may be metabolized and excreted over up to 30 days<sup>1</sup>, depending on frequency and amount of marijuana used. The cannabinoid test, 2545, provides a quantitative value for the primary metabolite of THC, THCA.

Creatinine is a metabolic product of creatine phosphate. Because of its low re-absorption rate, during urine production, creatinine acts as a reliable indicator of urine dilution.

Clinicians evaluating a patient for marijuana use must account for the fact that THCA is excreted into the urine over a period of up to 30 days<sup>1</sup>. This metabolic process results in positive THCA results, even for patients who have recently abstained from marijuana use. Over this period, quantitative levels of THCA may fluctuate, due to a variety of factors. The primary factor, causing this fluctuation, is urine dilution. If urine dilution is not accounted for, the variation of the THCA result may cause a clinician to erroneously believe a new use of marijuana has occurred.

The THCA-Creatinine ratio is a calculation, which allows the clinician to account for sample dilution, while evaluating patient results. Evaluating both the absolute THCA result and the THCA-Creatinine ratio, gives the clinician a better understanding of the significance of the patients results<sup>2</sup>.

### **Test Information:**

The THCA-Creatinine ratio is calculated automatically, when BOTH tests 2545 and 9044 are ordered for a patient, and the cannabinoids test is positive.

### **Specimen Collection:**

Urine is collected in preservative free containers and shipped to the lab at ambient temperature. Preserved urine is not acceptable.

### **Laboratory Results:**

Results for the test will be reported as **THCA/Creat Ratio**, with units of ng/mg. This test has no reference range, because it is a calculation based on existing test results.

### **Testing Schedule:**

Testing performed on Monday, Wednesday, Friday, results within 3-5 days.

**References:**

1. **Urinary Elimination of 11-Nor-9-Carboxy- $\Delta$ 9-tetrahydrocannabinol in Cannabis Users During Continuously Monitored Abstinence.** Robert S. Goodwin, William D. Darwin, C. Nora Chiang, Ming Shih, Shou-Hua Li, and Marilyn A. Huestis. Journal of Analytical Toxicology, Vol. 32, October 2008 pg. 562-569
2. **Differentiating new cannabis use from residual urinary cannabinoid excretion in chronic, daily cannabis users.** Eugene W. Schwilke, Rod G. Gullberg, William D. Darwin, C. Nora Chiang, Jean Lud Cadet, David A. Gorelick, Harrison G. Pope & Marilyn A. Huestis. Addiction, Vol. 106, Pg. 499-506

*Questions?* Call 249-2300 (Client Services) and ask for Toxicology (Michael Peterson, Toxicology Manager (585) 429-2380, or Dr John D'Souza, ACM Medical Director at (585) 429-2246).