

**510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION  
DECISION SUMMARY  
ASSAY ONLY TEMPLATE**

**A. 510(k) Number:**

k050125

**B. Purpose for Submission:**

Marketing of a laboratory control for rapamycin, tacrolimus, and cyclosporine

**C. Measurand:**

Three analytes: rapamycin, tacrolimus, and cyclosporine

**D. Type of Test:**

The product is used as a mimic of human serum of known composition used to validate the operation of clinical test equipment, typically LC/MS.

**E. Applicant:**

More Diagnostics, Inc.

**F. Proprietary and Established Names:**

Rap\Tac\CsA Control – Level 1  
Rap\Tac\CsA Control – Level 2  
Rap\Tac\CsA Control – Level 3  
Rap\Tac\CsA Control – Level 4

**G. Regulatory Information:**

1. Regulation section:  
21CFR862.1660 Quality control material (assayed and unassayed).
2. Classification:  
Class I
3. Product code:  
JJY

4. Panel:

(75) Chemistry

**H. Intended Use:**

1. Intended use(s):

See indications for use below.

2. Indication(s) for use:

The use of control material is to estimate test precision in a test system and to detect systematic deviation that may arise from reagent or analytical instrument variation in the measurement of cyclosporine A, tacrolimus and rapamycin.

3. Special conditions for use statement(s):

For Prescription Use Only

4. Special instrument requirements:

Liquid Chromatography/Mass Spectrometry (LC/MS)

**I. Device Description:**

Rap\Tac\CsA Control is prepared from human blood to which the purified analytes, preservatives, and stabilizers are added. The product is provided as a ready-to-use liquid. Rap\Tac\CsA Control is provided in 4 concentration ranges, ranges relevant in a clinical setting.

**J. Substantial Equivalence Information:**

1. Predicate device name(s):

Lyphochek® Whole Blood Control

2. Predicate 510(k) number(s):

k022041

3. Comparison with predicate:

<b>Similarities</b>		
Item or Characteristic	Device	Predicate
Storage	Frozen or thawed(refrigerated)	Frozen or thawed(refrigerated)
Supporting Matrix	Human blood	Human blood

<b>Differences</b>		
Item or Characteristic	Device	Predicate
Shelf Life	45 days thawed	14 days thawed
Deleted Analytes:	Not present	Analytes present: Acetaminophen Acid Phosphatase (Total) AFP Albumin Aldolase Alkaline Phosphatase (ALP) Alpha-1-Antitrypsin ALT/SGPT Amylase Amylase (Pancreatic) Apolipoprotein A-1 Apolipoprotein B AST/SGOT Bilirubin (Direct) Bilirubin (Indirect) Bilirubin (Total) Calcium Calcium (Ionized) Carbamazepine CEA Ceruloplasmin Chloride Cholesterol (HDL) Cholesterol (Total) Cholinesterase CO2 Complement C3    Complement C4 Copper Cortisol Creatinine Creatinine Kinase (CK) Digoxin Folate Gentamicin GGT GLDH Globulin Glucose Haptoglobin HBDH hCG-Beta smallunit IgA

Differences		
Item or Characteristic	Device	Predicate
		IgG IgM Iron Iron (TIBC) Iron (UIBC) Lactate (Lactic Acid) LAP-Arylamidase LDH Lipase Lithium Magnesium Osmolality PAP Phenobarbital Phenytoin Phosphorus Potassium Protein - Electrophoresis Protein (Total) PSA1 Salicylate Sodium T3 (Free) T3 Total T3 Uptake/ T Uptake T4 (Free) T4 (Total) TBG Theophylline Tobramycin Transferrin Triglycerides TSH Urea Nitrogen Uric Acid Valproic Acid Vancomycin Vitamin B12 Zinc
Added Analytes	Analytes present: rapamycin, tacrolimus, cyclosporine	Not present

**K. Standard/Guidance Document Referenced (if applicable):**

None were referenced in the submission.

**L. Test Principle:**

The product under submission is used as a sample mimic to confirm the performance of LC/MS instrumentation.

**M. Performance Characteristics (if/when applicable):**

1. Analytical performance:

a. *Precision/Reproducibility:*

Not applicable

b. *Linearity/assay reportable range:*

Not applicable

c. *Traceability, Stability, Expected values (controls, calibrators, or methods):*

There is not traceability associated with this product

Expected Values

Rap\Tac\CsA Control is prepared from human blood to which the purified analytes, preservatives, and stabilizers are added. The product is provided in 4 different concentration ranges. Lot specific mean values and ranges are provided to the user via the product insert for LC/MS instruments.

More Diagnostics, Inc. obtains these values either from the manufacture of the reagents or from analysis of the material as conducted by internal laboratory technologists. These values are obtained from repeated measurements on a representative sampling of the manufactured lot.

Stability

The stability of the component analytes is the primary criteria for acceptance. Stability is measured by:

- Open vial aging which mimics handling by the users of the product. These studies involve verifying concentration of the analytes when the product is stored capped but unsealed at 2 °C to 8 °C.
- Accelerated Stability Testing which involves storing tested samples at elevated temperatures in an effort to predict their long-term performance.
- Real-time stability testing, testing which actually measures the

performance of the frozen product versus predicting its degradation by the application of a model.

The thawed shelf life is defined as the either time required for 1 analyte to decrease in concentration by more than 10% of its mean value or the time to decrease in concentration by more than 2 standard deviations from its mean value. The most conservative (closest to mean) concentration of the two cutoffs is used. The limiting analyte for the product is cyclosporine. Open vial aging supports the claim of an opened, refrigerated shelf life of 45 days.

Real-time stability testing mimics the performance of the product as stored by the user. The frozen shelf life is defined as the time required for 1 analyte to decrease in concentration by more than 10% of its mean value or to decrease in concentration by more than 2 standard deviations from its mean value. Current real-time studies support the claim of a frozen shelf life of at least 2 years.

Accelerated stability testing was used to predict the ultimate performance of the product. The product was incubated at 37°C and 48°C and the concentration of the analytes was measured as a function of time. This information is used to calculate a rate constant using the Arrhenius equation. The project shelf life for product is 48 months if stored below -14°C.

- d. Detection limit:*  
Not Applicable
  - e. Analytical specificity:*  
Not Applicable
  - f. Assay cut-off:*  
Not Applicable
2. Comparison studies:
- a. Method comparison with predicate device:*  
Not Applicable
  - b. Matrix comparison:*  
Not Applicable
3. Clinical studies:
- a. Clinical Sensitivity:*  
Not Applicable
  - b. Clinical specificity:*

Not Applicable

c. Other clinical supportive data (when a. and b. are not applicable):

Not Applicable

4. Clinical cut-off:

Not Applicable

5. Expected values/Reference range:

Not Applicable

**N. Proposed Labeling:**

The labeling is sufficient and it satisfies the requirements of 21 CFR Part 809.10.

**O. Conclusion:**

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.