This Quantitative Microsphere System (QMS) package insert must be read carefully prior to use. Package insert instructions must be followed accordingly. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

INTENDED USE
The QMS Tacrolimus Immunoassay is intended for the quantitative determination of tacrolimus in human whole blood on automated clinical chemistry analyzers. The results obtained are used as an aid in the management of kidney, liver, and heart transplant patients receiving tacrolimus therapy. This in vitro diagnostic device is intended for clinical laboratory use only.

SUMMARY AND EXPLANATION OF TEST
Tacrolimus (FK506, PROGRAF®) is a macrolide antibiotic of fungal origin, Streptomyces tsukubaensis, with a potent immunosuppressive function as prescribed for patients with kidney and liver transplantation.1 Tacrolimus is an inhibitor of calcineurin, which is a phosphatase in nature and activates T cell proliferation.2,4 In cellular events, tacrolimus binds a family of binding protein termed FKBP51/FK506 binding proteins), and then forms a pentameric complex including tacrolimus, FKBP, calcineurins A and B, and calmodulin.2-5

The pentamer formation results in the inhibition of phosphatase activity of calcineurin, which is required to activate transcriptional factors for transport into the cell nucleus. Thus, the gene expression of T-lymphocytes is impaired especially for cytokines such as IL-2 and results in an immunosuppressive effect in patients.2-5

The distribution of tacrolimus between whole blood and plasma depends on several factors, such as hematocrit, drug concentration, and plasma protein concentration. The ratio of whole blood to plasma concentration averaged 35 (range 12 to 67).6,7 Tacrolimus is extensively metabolized by the cytochrome P-450 system mainly CYP3A4 and 3A5.8 The drug is metabolized into at least 8 metabolites (M-I – M-VIII) through demethylation and hydroxylation.9 The average half-life of tacrolimus in vivo is estimated as 48 hours.8-11 It was also reported that there were large intra-patient variability as well as inter-patient variability in tacrolimus concentrations in whole blood.12 Careful and frequent monitoring of tacrolimus is recommended.13

PRINCIPLES OF THE PROCEDURE
The QMS Tacrolimus Immunoassay is a homogeneous particle-enhanced turbidimetric immunoassay. The assay is based on competition between drug in the sample and drug coated onto a microparticle for antibody binding sites of the tacrolimus antibody reagent. The tacrolimus-coated microparticle reagent is rapidly agglutinated in the presence of the anti-tacrolimus antibody reagent and in the absence of any competing drug in the sample. The rate of absorbance change is measured photometrically at 700 nm. When a sample containing tacrolimus is added, the agglutination reaction is partially inhibited, slowing down the rate of absorbance change. A concentration-dependent classic agglutination inhibition curve can be obtained with the maximum rate of agglutination at the lowest tacrolimus concentration and the lowest agglutination rate at the highest tacrolimus concentration.

REAGENT HANDLING AND STORAGE
- **REAGENT 1** and **EXT (Extraction Reagent) Ready for Use**
- Before use, invert several times, avoiding the formation of bubbles.
- Remove air bubbles, if present in the reagent cartridge. Alternatively, allow the reagent to sit at the appropriate storage temperature to allow the bubbles to dissipate. To minimize volume depletion, do not use a transfer pipette to remove the bubbles.
- When either the **REAGENT 1** or the **REAGENT 2** cartridge becomes empty, replace both cartridges and verify calibration with at least one sample of each level of controls according to the established Quality Control requirements for your laboratory. If control results fall outside acceptable ranges, recalibration may be necessary.
- Refer to the analyzer specific Assay System Parameter Sheet for reagent on-board stability and other system specific information.

**CAUTION:** Reagents may interfere with proper detection of reagent level in the cartridge, causing insufficient reagent aspiration that could impact results. Do not use reagent kits beyond the expiration date.

**WARRANTS AND PRECAUTIONS**
- For In Vitro Diagnostic Use Only. Exercise the normal precautions required for handling all laboratory reagents.
- Do not mix materials from different kit lot numbers.
- Do not use reagent kits beyond the expiration date.

**CAUTION:** Materials of human origin were tested for HIV1 and 2, Hepatitis B and Hepatitis C by FDA approved method, and the findings were negative. However, as no test method can rule out the potential risk of infection with absolute certainty, the material must be handled just as carefully as a patient sample. In the event of exposure, the directives of the responsible health authorities should be followed.

**CAUTION:** The reagents included with the QMS Tacrolimus Immunoassay contain less than 0.1% sodium azide. Avoid contact with skin and mucus membranes. Flush affected areas with copious amounts of water. Seek immediate medical attention if reagents are ingested or come into contact with eyes. Sodium azide may react with lead or copper plumbing to form potentially explosive metal azides. When disposing of such reagents, always flush with large amounts of water to prevent accumulation of azide. Clean exposed metal surfaces with a 10% solution of sodium hydroxide.

**SPECIMEN COLLECTION AND HANDLING**
- Only whole blood specimens collected in EDTA tubes may be used. Follow the manufacturer’s processing instructions for all collection tubes. Care should be taken to preserve the integrity of the specimen from the time of collection until performance of the assay. Specimens should be labeled with both the time of blood collection as well as the last drug administration.
- Specimens should be capped and assayed within 7 days when stored at 2-8°C or within 6 months when stored at ≤ -20°C.10,11 Avoid repeated freezing and thawing. Do not induce foaming of samples.
- Light may affect sample stability. Keep stored samples out of light.
**PROCEDURE**

**Materials Provided**
- QMS Tacrolimus Reagent Kit, [REF] 10015556

**Materials Required but not Provided**
- QMS Tacrolimus Calibrators, [REF] 10015573, CAL A: 1 x 4 mL, CAL B-F: 1 x 2 mL each
- Quality Control Products
  - MORE Diagnostics Rap Tac CsA Controls, Level 1, 280-1: 4 x 4 mL each
  - Level 2, 280-2: 4 x 4 mL each
  - Level 3, 280-3: 4 x 4 mL each
  - Bio-Rad Lyphocheck® Whole Blood Immunosuppressant Controls, Level 1, 274: 6 x 2 mL each
  - Level 2, 275: 6 x 2 mL each or Level 4, 277: 6 x 2 mL each
  - Level 3, 276: 6 x 2 mL each
  - Level 5, 278: 6 x 2 mL each or 5 Level Minipack, 279X: 5 x 2 mL each
  - For other commercially available quality control products call Thermo Fisher Scientific Technical Support
  - Methanol, HPLC grade (≥ 98.8% purity)
  - Round bottom Microcentrifuge tubes
  - Automated clinical chemistry analyzer

**Sample Preparation**

Note: Please follow vendor-specific package insert instructions and handling recommendations, if provided, for controls.

Allow calibrators and patient specimens to equilibrate to room temperature before extraction. Calibrators should mix for a minimum of 15-20 minutes and patient specimens should be thoroughly mixed at room temperature prior to use. Mix calibrators and patient specimens well by gentle inversion (use of a rocker is preferred). Avoid the formation of bubbles.

**Extraction Solution Preparation**

1. Add exactly 10 mL of room temperature Extraction Reagent to a clean, dry, airtight bottle.
2. Add exactly 40 mL of HPLC Grade Methanol (≥ 98.8% purity) to the bottle and gently mix. Label this as "Tacrolimus Working Extraction Solution." Record the current date, and date of expiration (2 weeks from date of preparation) on the label. Store at room temperature.

**Extraction Procedure for Samples, Calibrators, and Controls**

**FOR OPTIMAL RESULTS, FOLLOW THE STEPS BELOW PRECISELY. EXTRACTS MUST BE RUN IMMEDIATELY AFTER EXTRACTION.**

1. Prepare and label round bottom microcentrifuge tubes for extraction of samples, calibrators and controls. Prepare one microcentrifuge tube for each sample.
2. Use a pipette to measure exactly 200 μL of sample, calibrator or control materials into the labeled microcentrifuge tube. Aspirate the sample with the pipette, gently wipe the pipette tip on the edge of the sample vial to release any access sample, then dispense the sample into the inside wall of the microcentrifuge tube. **Note:** Check the pipette tip to ensure no air bubbles are in the tip. Air in the tip is a potential source for imprecision.
3. Use a pipette to measure exactly 200 μL of extraction solution into the microcentrifuge tube. When preparing multiple samples, a repeater pipette is recommended to aspirate and dispense the extraction solution. Remove any air bubbles in the pipette tip prior to dispensing the extraction solution.
4. Cap and vortex the microcentrifuge tube at maximum speed immediately for 15-30 seconds. Inspect each tube for a homogeneous mixture. If un-mixed sample is detected, dislodge the un-mixed portion and re-vortex.
5. Let the mixture in the microcentrifuge tube sit at room temperature for 5-7 minutes.
6. Place the microcentrifuge tube into a centrifuge and centrifuge for 5 minutes at 13,000 rpm.
7. Decant the supernatant into a sample cup (avoid the formation of bubbles) and immediately run the measurement to minimize sample evaporation. Do not tap the cup to release the last drop in a way that could disturb the pellet.
8. Dispose of extracts after analysis. Retesting of samples requires fresh extractions.

**Specimen Dilution Procedure**

Use QMS Tacrolimus CAL A (0.0 ng/mL) to manually dilute samples outside the linearity of the assay.

**Manual Dilution Protocol**

A manual dilution can be performed on patient samples with tacrolimus concentrations reported as greater than 30 ng/mL by making a 1:1 dilution of the specimen with QMS Tacrolimus CAL A (0.0 ng/mL) before extracting the sample. The dilution must be performed so the diluted test result reads greater than the assay sensitivity of 1 ng/mL. The concentration reported must be multiplied by the manual dilution factor to obtain the final sample concentration.

**Final Sample Concentration = Reported Concentration x Manual Dilution Factor**

**CALIBRATION**

The QMS Tacrolimus Immunoassay must be calibrated using a full calibration (6-point) procedure. To perform a full calibration, test the QMS Tacrolimus Calibrators A, B, C, D, E, and F. Only QMS Tacrolimus Calibrators should be used with the QMS Tacrolimus Immunoassay. Accurate quantitative determination of tacrolimus cannot be obtained if the QMS Tacrolimus Calibrators set, [REF] 10015573, is not used in calibration of the QMS Tacrolimus Immunoassay.

Calibration is required with each new lot number. Verify the calibration curve with at least one sample of each level of controls according to the established Quality Control requirements for your laboratory. If control results fall outside acceptable ranges, corrective action should be taken.

**Note:** A calibrator value assignment card is included in each calibrator kit. Before using a new kit of calibrators, check your chemistry parameters to ensure that the calibrator concentrations match the values printed on the value assignment card.

**Calibration Frequency**

Recalibration is recommended
- After calibrator or reagent (kit) lot change
- After performance of monthly instrument maintenance
- As required following quality control procedures

**QUALITY CONTROL**

All quality control requirements should be performed in conformance with local, state and/or federal regulations or accreditation requirements.

As appropriate, refer to your laboratory Standard Operating Procedure(s) and/or Quality Assurance Plan for additional quality control requirements and potential corrective actions.

Recommended control requirements for the QMS Tacrolimus Immunoassay:
- A minimum of one sample of each level of controls should be run each time patient samples are extracted and assayed.
- If more frequent control monitoring is required, follow the established Quality Control procedures for your laboratory.
- All quality control requirements should be performed in conformance with local, state and/or federal guidelines.
- If quality control results do not fall within an acceptable range defined by your laboratory, patient values may be suspect and should not be reported. Corrective action should be taken.

**RESULTS**

The result units for the QMS Tacrolimus Immunoassay are reported as ng/mL.

**Reporting Results:** Laboratories should report that the results are obtained by the QMS Tacrolimus Immunoassay. Accurate quantitative determination of tacrolimus cannot be obtained if the QMS Tacrolimus Immunoassay is not used in calibration of the QMS Tacrolimus Immunoassay.

**Result Error Codes:** Some results may contain Result Error Codes. Refer to the instrument specific operations manual for a description of the error codes.

**LIMITATIONS OF THE PROCEDURE**

- The concentrations of tacrolimus in a given specimen determined with assays from different manufacturers can vary due to differences in assay methods and reagent specificity. Monitoring with one assay consistently is recommended.
- Immunoassays are non-specific and cross-react with metabolites. Because of this immunoassays may overestimate the concentration of tacrolimus (see Method Comparison section). When elimination of tacrolimus is impaired metabolites may accumulate to a greater extent leading to a greater overestimation. In such cases use of a specific assay (e.g. chromatographic method) should be considered.
• Interfering heterophile antibodies occur at a low frequency in the population. These antibodies can lead to erroneous results (including erroneously low results caused by agglutination of the microparticle reagent).
• The test findings should always be assessed in conjunction with the patient’s medical history, clinical examinations and other findings. Additional testing to confirm results should be performed when results are inconsistent with clinical evidence.
• Refer to the PROGRF package insert regarding effects of co-administered drugs, and drugs that may increase or decrease tacrolimus concentrations.14

EXPECTED VALUES

The optimal therapeutic range for tacrolimus in whole blood has not been established with this assay. The therapeutic ranges for tacrolimus may vary depending on clinical factors and on the methodology used.

Given the heterogeneity of the patient’s clinical state, clinicians should establish a desired therapeutic management range based on their own experience as well as each patient’s clinical requirements. Changes to treatment regimen should not be based solely on tacrolimus values. Differences in sensitivity to immunosuppressive and nephrotoxic effects of tacrolimus, co-administration of other immunosuppressants, type of transplant, time post-transplant and a number of other factors contribute to different requirements for optimal blood levels of tacrolimus.

Optimal ranges may vary depending on the test used, and therefore should be established for each commercial test. Values obtained with different assay methods cannot be used interchangeably due to differences in methodology and cross-reactivity, nor should correction factors be applied. Consistent use of one assay for individual patients is recommended.

SPECIFIC PERFORMANCE CHARACTERISTICS

Representative performance results obtained on a commercially available automated clinical chemistry analyzer that employs turbidimetric quantitative analysis are shown below. Unless otherwise stated all assays were conducted in accordance with the assay procedure provided herein using the Beckman AU880 analyzer. Results obtained in individual laboratories may differ from these data. For additional analyzer specific performance data, refer to the analyzer specific application protocol or call Thermo Fisher Scientific Technical Support for assistance.

Reportable Range

The reportable range for the QMS Tacrolimus Immunoassay is 1 ng/mL (minimum reportable value based on Functional Sensitivity) to 30 ng/mL tacrolimus.

Functional Sensitivity (Limit of Quantitation)

The functional sensitivity represents the lowest tacrolimus concentration that can be measured with an inter-assay precision at 20% CV. The study was carried out using whole blood specimens spiked with tacrolimus ranging from 0.5 to 5.0 ng/mL for one measurement per run, twice a day for 30 days with a total of 60 data points. At the upper 95% confidence limit, the LOQ was calculated to be 0.9 ng/mL, which supports the lower assay limit of 1.0 ng/mL. The observed percentage recovery at 0.9 ng/mL is 102.0%.

Dilution Linearity

A linearity study was performed by diluting a high concentration tacrolimus sample with the QMS Tacrolimus Calibrator A to concentrations evenly distributed across the assay range. The percent recovery was determined by dividing the measured tacrolimus concentration by the expected concentration. The expected concentrations were determined using the high concentration tested multiplied by a dilution factor.

<table>
<thead>
<tr>
<th>% of High Sample</th>
<th>Expected Concentration (ng/mL)</th>
<th>Measured Concentration (ng/mL)</th>
<th>Recovery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.0%</td>
<td>29.9</td>
<td>29.9</td>
<td>100.0%</td>
</tr>
<tr>
<td>90.0%</td>
<td>26.9</td>
<td>26.0</td>
<td>96.3%</td>
</tr>
<tr>
<td>80.0%</td>
<td>23.9</td>
<td>22.8</td>
<td>95.4%</td>
</tr>
<tr>
<td>70.0%</td>
<td>20.9</td>
<td>19.2</td>
<td>91.8%</td>
</tr>
<tr>
<td>60.0%</td>
<td>17.9</td>
<td>17.2</td>
<td>96.1%</td>
</tr>
<tr>
<td>50.0%</td>
<td>14.9</td>
<td>14.7</td>
<td>98.6%</td>
</tr>
<tr>
<td>40.0%</td>
<td>12.0</td>
<td>11.1</td>
<td>92.7%</td>
</tr>
<tr>
<td>30.0%</td>
<td>9.0</td>
<td>8.6</td>
<td>95.7%</td>
</tr>
<tr>
<td>20.0%</td>
<td>6.0</td>
<td>6.0</td>
<td>100.0%</td>
</tr>
<tr>
<td>10.0%</td>
<td>3.0</td>
<td>3.1</td>
<td>102.9%</td>
</tr>
<tr>
<td>5.0%</td>
<td>1.5</td>
<td>1.5</td>
<td>100.4%</td>
</tr>
<tr>
<td>3.3%</td>
<td>1.0</td>
<td>1.0</td>
<td>101.4%</td>
</tr>
</tbody>
</table>

Table Continued

<table>
<thead>
<tr>
<th>% of High Sample</th>
<th>Expected Concentration (ng/mL)</th>
<th>Measured Concentration (ng/mL)</th>
<th>Recovery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.8%</td>
<td>0.8</td>
<td>0.8</td>
<td>99.6%</td>
</tr>
<tr>
<td>0.0%</td>
<td>0.0</td>
<td>0.0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Expected Concentration = % of High Sample x High Measured Concentration
Recovery (%) = (Measured Concentration ÷ Expected Concentration) x 100

Recovery

Negative whole blood samples were spiked with known amounts of tacrolimus at concentrations across the assay range. The tacrolimus concentrations of these samples were verified by an LC-MS/MS and tested with the QMS Tacrolimus Immunoassay. The results are shown below.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>n</th>
<th>Expected Concentration (ng/mL)</th>
<th>Measured Concentration (ng/mL)</th>
<th>Recovery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 1</td>
<td>21</td>
<td>2.7</td>
<td>2.7</td>
<td>101.8</td>
</tr>
<tr>
<td>Sample 2</td>
<td>21</td>
<td>9.8</td>
<td>10.8</td>
<td>109.4</td>
</tr>
<tr>
<td>Sample 3</td>
<td>21</td>
<td>18.0</td>
<td>17.7</td>
<td>98.2</td>
</tr>
<tr>
<td>Sample 4</td>
<td>21</td>
<td>19.8</td>
<td>21.3</td>
<td>107.5</td>
</tr>
<tr>
<td>Sample 5</td>
<td>21</td>
<td>27.0</td>
<td>27.1</td>
<td>100.4</td>
</tr>
</tbody>
</table>

Recovery (%) = (Measured Concentration ÷ Expected Concentration) x 100

Precision

Precision was evaluated using whole blood pooled patient and spiked samples. The study was conducted as described in CLSI protocol EP5-A2.15 Each sample was assayed in duplicates per run, twice a day for 20 days. The mean, the within-run and total-run SD and %CV were calculated. Representative results are shown below.

<table>
<thead>
<tr>
<th>Samples</th>
<th>n</th>
<th>Mean (ng/mL)</th>
<th>Within-Run SD</th>
<th>%CV</th>
<th>Total-Run SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiked Sample A</td>
<td>80</td>
<td>3.0</td>
<td>0.2</td>
<td>4.9%</td>
<td>0.2</td>
<td>7.1%</td>
</tr>
<tr>
<td>Spiked Sample B</td>
<td>80</td>
<td>10.0</td>
<td>0.2</td>
<td>1.9%</td>
<td>0.4</td>
<td>3.6%</td>
</tr>
<tr>
<td>Spiked Sample C</td>
<td>80</td>
<td>20.9</td>
<td>0.4</td>
<td>1.9%</td>
<td>1.1</td>
<td>5.0%</td>
</tr>
<tr>
<td>Patient Sample A</td>
<td>80</td>
<td>3.2</td>
<td>0.1</td>
<td>4.1%</td>
<td>0.2</td>
<td>6.2%</td>
</tr>
<tr>
<td>Patient Sample B</td>
<td>80</td>
<td>10.4</td>
<td>0.2</td>
<td>2.2%</td>
<td>0.4</td>
<td>3.6%</td>
</tr>
<tr>
<td>Patient Sample C</td>
<td>80</td>
<td>24.2</td>
<td>0.5</td>
<td>2.1%</td>
<td>1.1</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

Method Comparison

Correlation studies were performed to compare the QMS Tacrolimus Immunoassay to two LC-MS/MS methods (System 1 and System 2) and the Abbott ARCHITECT® Tacrolimus Assay. The studies used human whole blood EDTA specimens obtained from kidney, liver and heart transplant patients taking tacrolimus. All tested specimens were trough samples from mainly adult patients with time of post-transplant for the samples generally > 9 months. The patients tested received drug regimens of Tacrolimus either alone or coadministered with other immunosuppressive drugs, mainly Mycophenolate Mofetil (MMF), Mycophenolic Acid (MPA), or Corticosteroids. The results of the Deming regression analysis16 between the different methods are shown in the table below.

<table>
<thead>
<tr>
<th>Comparative Method</th>
<th>n</th>
<th>Slope (95% CI)*</th>
<th>Intercept (95% CI)</th>
<th>Correlation Coefficient (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC-MS/MS System 1</td>
<td>383</td>
<td>1.111 (1.084 to 1.137)</td>
<td>0.53 (0.31 to 0.76)</td>
<td>0.972</td>
</tr>
<tr>
<td>LC-MS/MS System 2</td>
<td>232</td>
<td>1.130 (1.092 to 1.167)</td>
<td>0.71 (0.42 to 1.01)</td>
<td>0.967</td>
</tr>
<tr>
<td>Abbott ARCHITECT Tacrolimus Assay</td>
<td>250</td>
<td>1.126 (1.071 to 1.181)</td>
<td>-0.03 (-0.63 to 0.56)</td>
<td>0.937</td>
</tr>
</tbody>
</table>

*Confidence Interval (CI)
QMS Tacrolimus Specimen Range: 1.0 to 30.8 ng/mL
LC-MS/MS Specimen Range: 0.8 to 29.5 ng/mL
ARCHITECT Tacrolimus Specimen Range: 2.4 to 28.1 ng/mL
Scatter plot for results from QMS Tacrolimus vs LC-MS/MS System 1 for combined kidney, liver, and heart transplant samples.

Bland and Altman bias plot for results from QMS Tacrolimus vs LC-MS/MS System 1 for combined kidney, liver, and heart transplant samples. The Mean Bias is calculated as the average difference between the QMS Tacrolimus Immunoassay and LC-MS/MS System 1 results.

Scatter plot for results from QMS Tacrolimus vs Abbort ARCHITECT Tacrolimus for combined kidney and liver transplant samples.

Bland and Altman bias plot for results from QMS Tacrolimus vs Abbort ARCHITECT Tacrolimus assay for combined kidney and liver transplant samples. The Mean Bias is calculated as the average difference between the QMS Tacrolimus Immunoassay and ARCHITECT Tacrolimus results.
The specificity studies were conducted using CLSI protocol EP7-A2 as a guideline. The specificity was tested for the available major metabolites of tacrolimus. Other medications routinely administered with tacrolimus were tested to determine whether these compounds affect the quantitation of tacrolimus using the QMS Tacrolimus Immunoassay. The cross-reactivity of the metabolites was calculated using the formula:

\[
\text{Cross-Reactivity} = \left( \frac{\text{Measured concentration} - \text{Expected concentration}}{\text{Expected concentration}} \right) \times 100
\]

Cross-reactivity with tacrolimus metabolites

The cross-reactivity of the QMS Tacrolimus Immunoassay to major tacrolimus metabolites is presented in the following table. The compounds tested were added to human whole blood samples containing two concentrations of tacrolimus drug and tested in replicates of three. Percent of cross-reactivity was calculated.

![Table](image)

Recovery (%) = (Measured Concentration ÷ Expected Concentration) x 100

The observed cross reactivity of Tacrolimus Metabolite M-IV was ≤ 174.8%. Tacrolimus Metabolite M-V and M-VIII have not been assessed to determine possible cross-reactivity.

Interfering Substances

Interference studies were conducted using CLSI protocol EP7-A2 as a guideline. The QMS Tacrolimus Immunoassay was tested with tacrolimus co-administered drugs and common drugs to see if there is any potential interference. The compounds tested were added to human whole blood samples containing approximately 5 and 12 ng/mL of tacrolimus drug and tested using the QMS Tacrolimus Immunoassay. Recovery of tacrolimus concentration greater than 10% error was considered to have interference with the assay. The compounds tested at the concentrations listed in the table below exhibit no interference with the assay. The average percentage recovery of tacrolimus ranged from 91% to 109%.

![Table](image)

The following potentially interfering endogenous substances, when tested with the QMS Tacrolimus Immunoassay at the concentrations indicated exhibited 92% to 108% recovery.
**BIBLIOGRAPHY**


**Key to Symbols Used**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>IVD</td>
<td>In Vitro Diagnostic Medical Device</td>
</tr>
<tr>
<td>LOT</td>
<td>Batch Code/Lot Number</td>
</tr>
<tr>
<td>REAGENT 1</td>
<td>Reagent 1</td>
</tr>
<tr>
<td>REAGENT 2</td>
<td>Reagent 2</td>
</tr>
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<td>Catalog Number</td>
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<td>Ingredients</td>
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<td>Protect From Light</td>
<td></td>
</tr>
<tr>
<td>Caution: Consult Accompanying Documents</td>
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<tr>
<td>Consult Instructions for Use</td>
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<td>Harmful</td>
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