MAR 1 4 2007

510(k) Summary

K062203

Introduction

According to the requirements of 21 CFR 807.92, the following information provides sufficient detail to understand the basis for a determination of substantial equivalence.

Submitter name, address, contact

Roche Diagnostics Corporation
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(317) 521 - 3723

Contact Person: Theresa Ambrose Bush

Date Prepared: Nov 3, 2006

Device Name

Proprietary name: Tina-Quant D-Dimer Test System on Roche Hitachi and COBAS Integra Analyzers

Common name: D-Dimer Test System

Classification name: Fibrinogen/Fibrin Degradation Products Assay

Description

The Tina-Quant® D-Dimer test system is an immunoturbidimetric assay for the in vitro quantitative determination of fibrin degradation products including D-Dimer and X-oligomers. Latex particles of uniform size are coated with monoclonal antibodies (F(ab')2 fragments) to the D-Dimer epitope. The antigen/antibody complexes produced by the addition of samples containing D-dimer lead to an increase in the turbidity of the test reactants, which can be determined turbidimetrically. The calibrator is D-Dimer calibrator and the recommended control material is D-dimer Control I/II.

Intended use

for the in vitro quantitative determination of fibrin degradation products including D-Dimer and X-oligomers. In conjunction with a non-high clinical probability assessment, a normal (< 0.5 μg FEU/ml) result excludes deep vein thrombosis (DVT) and pulmonary embolism (PE) with high sensitivity.

Substantial equivalence

The Tina-Quant® D-Dimer Test System on the Roche Hitachi and COBAS Integra Analyzer is substantially equivalent to other products in commercial distribution. We claim equivalence to the currently marketed Tina-quant® D-Dimer Test System cleared under K030740. For purposes of the intended use extension, we also claim equivalence to the Biomerieux Vidas ® D-Dimer Exclusion Assay, cleared under K040822.

Substantial equivalence – comparison

The below table compares the modified Tina-Quant® D-Dimer Test System on the Roche Hitachi and COBAS Integra Analyzers with the predicate devices, Tina-quant® D-Dimer Test System (K030740) and Biomerieux Vidas ® D-Dimer Exclusion Assay (K040822)

Substantial equivalence comparison table

Characteristic	Modified Device: Tina-Quant® D-Dimer Test System	Predicate device Tina-Quant® D-Dimer Test System (K030740)	Predicate device Biomerieux Vidas ® D-Dimer Exclusion Assay (K040822)
Intended Use	For Roche/Hitachi Immunoturbidimetric assay for the in vitro quantitative determination of fibrin degradation products including D-Dimer and X-oligomers. In conjunction with a non-high clinical probability assessment, a normal (< 0.5 µg FEU/ml) result excludes deep vein thrombosis (DVT) and pulmonary embolism (PE) with high sensitivity. For COBAS Integra : The cassette COBAS Integra Tina-Quant® D-Dimer contains an in vitro diagnostic reagent system intended for use on COBAS Integra systems for the quantitative immunological determination of fibrin degradation products (D-Dimer and X-oligomers) in plasma. In conjunction with a non-high clinical probability assessment, a normal (< 0.5 µg FEU/ml) result excludes deep vein thrombosis (DVT) and pulmonary embolism (PE) with high sensitivity.	For Hitachi: Immunoturbidimetric assay for the in vitro quantitative determination of fibrin degradation products including D-Dimer and X-oligomers. For COBAS Integra: The cassette COBAS Integra Tina-Quant® D-Dimer contains an in vitro diagnostic reagent system intended for use on COBAS Integra systems for the quantitative immunological determination of fibrin degradation products (D-Dimer and X-oligomers) in plasma.	The VIDAS ® D-Dimer Exclusion assay is an automated quantitative test for use on the VIDAS analyzers for the immunoenzymatic determination of fibrin degradation products (FbDP) in citrated human plasma using the ELFA techniques (Enzyme Linked Fluorescent Assay). The VIDAS® D-Dimer Exclusion assay is indicated for use in conjunction with a clinical Pre-test Probability Assessment (PTP) assessment model to exclude deep venous thrombosis (DVT) and pulmonary embolism (PE) in outpatients suspected of DVT or PE.

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Substantial equivalence comparison table

Characteristic	Modified Device: Tina-Quant® D-Dimer Test System	Predicate device Tina-Quant® D-Dimer Test System (K030740)	Predicate device Biomerieux Vidas ® D-Dimer Exclusion Assay (K040822)
Indications for use	For the in vitro quantitative determination of fibrin degradation products including D-dimer and X-oligomers. Aid in detecting the presence and degree of intravascular coagulation and fibrinolysis and in monitoring therapy for disseminated intravascular coagulation. In conjunction with a non-high clinical probability assessment, a normal (< 0.5 µg FEU/ml) result excludes deep vein thrombosis (DVT) and pulmonary embolism (PE) with high sensitivity.	For the in vitro quantitative determination of fibrin degradation products including D-dimer and X-oligomers. Aid in detecting the presence and degree of intravascular coagulation and fibrinolysis and in monitoring therapy for disseminated intravascular coagulation.	For use in conjunction with a clinical Pre-test Probability Assessment (PTP) assessment model to exclude deep venous thrombosis (DVT) and pulmonary embolism (PE) in outpatients suspected of DVT or PE.
R2 reagent buffer matrix	Anti-D-Dimer latex suspension (0.15%) in pH 7.2 buffer matrix Active ingredients are identical in composition and concentration to predicate device.	Anti-D-Dimer latex suspension (0.15%) in Tris buffer pH 8.2	Not applicable
Assay principle	Same as K030740	Particle-enhanced immunoturbidimetric assay	Two-step enzyme immunoassay sandwich method with a final fluorescent detection.
Instrument	Same as K030740	Roche Hitachi family of analyzers COBAS Integra family of analyzers	VIDAS instruments

Characteristic	Modified Device: Tina-Quant® D-Dimer Test System	Predicate device Tina-Quant® D-Dimer Test System (K030740)	Predicate device Biomerieux Vidas ® D-Dimer Exclusion Assay (K040822)
Reagent Stability	Same as K030740	Roche/Hitachi • Unopened: up to stated expiration data at 2-8 oC • On board: 28 days opened and refrigerated COBAS Integra • Unopened: up to stated expiration data at 2-8 oC • Integra 400: On board 12 weeks at 10 -15 oC • Integra 700/800: On board 12 weeks at 8 oC	Up to stated expiration date at 2-8 oC
Sample type	Same as K030740	Citrated plasma Li-Heparin plasma	Trisodium citrate.
Traceability/ standardization	Same as K030740	Asserachrom D-Dimer method	unclear
Calibrator	Same as K030740	D-Dimer Calibrator	DD2 Calibrators
Quality Control	Same as K030740	D-Dimer Control I/II	DD2 Controls

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Substantial Equivalence Comparison Tables (continued)

Characteristic	Modified Device: Tina-Quant® D-Dimer Test System	Predicate device Tina-Quant® D-Dimer Test System (K030740)	Predicate device Biomerieux Vidas ® D-Dimer Exclusion Assay (K040822)
Measuring range	Same as K030740	Roche/Hitachi 0.15-9.0 ug FEU/mL 0.15 – 21.0 ug FEU/mL extended range with dilution and rerun COBAS Integra 0.15-9.0 ug FEU/mL 0.15-54.0 ug FEU/mL extended range with postdilution	45-10,000 ng/mL (FEU)
Lower Detection Limit	Same as K030740	Roche/Hitachi: 0.04 ug FEU/ mL COBAS Integra: <0.08 ug FEU/mL	≤ 45 ng/mL (FEU)
Within-run precision (%CV)	Same as K030740	Roche/Hitachi 7.3% at 0.19 ug FEU/mL 1.7 % at 0.86 ug FEU/mL 0.8 % at 5.11 FEU/ mL COBAS Integra: 6.9% at 0.279 ug FEU/mL 1.1 % at 2.88 ug FEU/mL	5.0 % at 264 ng/mL (FEU) 3.9 % at 549 ng/mL (FEU) 5.3 % at 7283 ng/mL (FEU)

Between-run/ Intra-Assay precision (%CV)	Same as K030740	Roche/Hitachi 6.5% CV at 0.30 ug FEU/mL 8.3 % CV at 0.87 ug FEU/mL 3.2 % CV at 4.58 FEU/ mL COBAS Integra: 6.8% CV at 0.28 ug FEU/mL 1.1 % CV at 2.89 ug FEU/mL	5.70 % at 264 ng/mL (FEU) 5.8 % at 549 ng/mL (FEU) 7.1% at 7283 ng/mL (FEU)
Between-run/ Intra-Assay precision (%CV)	Same as K030740	Roche/Hitachi 6.5% CV at 0.30 ug FEU/mL 8.3 % CV at 0.87 ug FEU/mL 3.2 % CV at 4.58 FEU/ mL COBAS Integra: 6.8% CV at 0.28 ug FEU/mL 1.1 % CV at 2.89 ug FEU/mL	5.70 % at 264 ng/mL (FEU) 5.8 % at 549 ng/mL (FEU) 7.1% at 7283 ng/mL (FEU)
Limitations: interferences	Same as K030740	Roche/ Hitachi No significant interference up to • I index of 20 (20 mg/dL bilirubin) • H index of 500 (500 mg/dL hemoglobin) • L index of 750 (intralipid) • Rheumatoid factors < 100 IU/mL • Heparin < 1.5 IU/mL No interference with 31 frequently used pharmaceuticals No high dose hook effect up to 1000 mg/L In rare cases, high levels of IgM can give falsely high results	None of the following factors have been found to significantly influence this assay: hemolysis, lipemia, bilirubinemia, rheumatoid factor. It is recommended not to use samples that appear to be clearly hemolyzed, lipemic, or icteric.

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Substantial Equivalence comparison table (continued)

Characteristic	Modified Device: Tina-Quant® D-Dimer Test System	Predicate device Tina-Quant® D-Dimer Test System (K030740)	Predicate device Biomerieux Vidas ® D-Dimer Exclusion Assay (K040822)
Limitations: interferences (continued)	Same as K030740	High concentrations of D-fragments, as observed during lysis therapy, lead to depressed measurements Fructosamine should be assigned to a higher channel then D-Dimer on Roche/Hitachi analyzers Results should always be assessed in conjunction with the patient's medical history, clinical examination, and other findings. <u>COBAS Integra</u> No significant interference up to • H index of 300 (300 mg/dL hemoglobin) • L index of 600 (intralipid) • Rheumatoid factors < 100 IU/mL • Heparin < 1.5 IU/mL No significant interference from bilirubin or rheumatoid factors.	See above

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Substantial Equivalence comparison table (continued)

Characteristic	Characteristic	Modified Device: Tina-Quant® D-Dimer Test System	Predicate device Tina-Quant® D-Dimer Test System (K030740)
Limitations: interferences (continued)	Same as K030740	In rare cases, high levels of IgM can give falsely high results High concentrations of D-fragments, as observed during lysis therapy, lead to depressed measurements Fructosamine should be assigned to a higher channel then D-Dimer on Roche/Hitachi analyzers Results should always be assessed in conjunction with the patient's medical history, clinical examination, and other findings.	See above
Expected values	Same as K030740	<0.5 ug/ FEU / mL	Below 500 ng/mL FEU

Submission purpose

The purpose of this submission is to extend the intended use of the Tina-Quant® D-Dimer Test System on the Roche Hitachi and COBAS Integra analyzers to include exclusion of deep vein thrombosis (DVT) and pulmonary embolism (PE) exclusion. We also provide notification of a minor change to the reagent formulation (a pH change of the R2 buffer matrix) which has occurred since the device clearance. This change did not result in any labeled performance changes.

Supporting information

The change in reagent composition was validated according to design control procedure.

Published clinical guidelines and several clinical studies exist which demonstrate and support the clinical utility of the Tina-Quant D-Dimer test in the evaluation of deep vein thrombosis (DVT) and pulmonary embolism (PE) in patients with suspected DVT or PE. A guidelines summary and systematic review of published clinical studies were presented as clinical support for this claim extension. Specific support for the exclusion claim came from two management studies, as follows.

Clinical performance in the exclusion of DVT:
Tina-Quant ® D-Dimer was used in a multicenter management study involving 812 outpatients with suspected DVT . Using the Wells probability assessment score , patients were classified as having a high (≥3) or non-high (< 3) pretest probability of DVT. The Tina-Quant® D-Dimer test was then performed using a cutoff of 0.5 ug FEU/ mL. Those patients having a normal (negative) D-Dimer test result and a non-high pretest probability had no further diagnostic testing and were followed up for 3 months for development of DVT. Only one of 176 such patients developed DVT during the follow-up period. The sensitivity, negative predictive value, and failure rate of the Tina-Quant ® D-Dimer assay in conjunction with a non-high pretest probability is summarized below:

Sensitivity:	99.3%
Negative Predictive Value:	99.4%
Failure Rate:	0.6%.

Clinical performance in the exclusion of PE:

Tina-Quant ® D-Dimer was used in a management study involving 168 outpatients with suspected PE . Using the Wells clinical model for PE probability, patients were classified as having a low, moderate, or high pretest probability of PE. The Tina-Quant® D-Dimer test was then performed using a cutoff of 0.5 ug FEU/ mL. Those patients having a normal (negative) D-Dimer test result and a non-high (low or moderate) pretest probability had no further diagnostic testing and were followed up for 3 months for development of PE. No patients developed PE during the follow-up period. The sensitivity, negative predictive value, and failure rate of the Tina-Quant ® D-Dimer assay in conjunction with a non-high pretest probability is summarized below:

Sensitivity:	100 %
Negative Predictive Value:	100 %
Failure Rate:	0 %.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

ROCHE DIAGNOSTICS CORP.
C/O Theresa Ambrose Bush
9115 Hague Road
Indianapolis, Indiana 46250

MAR 14 2007

Re: k062203
Trade/Device Name: Tina-Quant D-Dimer Test System
Regulation Number: 21 CFR 864.7320
Regulation Name: Fibrinogen/Fibrin Degradation Products Assay
Regulatory Class: Class II
Product Code: GHH
Dated: July 31, 2006
Received: August 1, 2006

Dear Ms. Bush:
We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.
This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Office of Compliance at (240) 276-0450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (240) 276-3150 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Robert L. Becker, Jr., MD, PhD
Director
Division of Immunology and Hematology
Office of In Vitro Diagnostic Device
Evaluation and Safety
Center for Devices and
Radiological Health

Enclosure

cc: HFZ-401 DMC

HFZ-404 510(k) Staff
HFZ- 440 Division
D.O.

Indications for Use

510(k) Number (if known): K062203

Device Name: **Tina-Quant D-Dimer Test System**

Indications For Use:

For Roche/Hitachi Immunoturbidimetric assay for the in vitro quantitative determination of fibrin degradation products including D-Dimer and X-oligomers. In conjunction with a non-high clinical probability assessment, a normal (< 0.5 µg FEU/ml) result excludes deep vein thrombosis (DVT) and pulmonary embolism (PE) with high sensitivity.

For COBAS Integra : The cassette COBAS Integra Tina-Quant® D-Dimer contains an in vitro diagnostic reagent system intended for use on COBAS Integra systems for the quantitative immunological determination of fibrin degradation products (D-Dimer and X-oligomers) in plasma. In conjunction with a non-high clinical probability assessment, a normal (< 0.5 µg FEU/ml) result excludes deep vein thrombosis (DVT) and pulmonary embolism (PE) with high sensitivity.

Prescription Use **XXXX** AND/OR Over-The-Counter Use _____
(Part 21 CFR 801 Subpart D) (21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

Office of In Vitro Diagnostic Device
Evaluation and Safety

510(k) K062203

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