K042347

NOV 19 2004

SUMMARY OF SAFETY AND EFFECTIVENESS INFORMATION

This summary of 510(k) safety and effectiveness information is being submitted in accordance with the requirements of SMDA 1990 and 21 CFR 807.92.

Submitter's Name:	George M. Plummer Dade Behring Inc. P.O. Box 6101 Newark, DE 19714-6101
Date of Preparation:	August 27, 2004
Name of Product(s):	Dimension® NT-proBNP (PBNP) Flex® reagent cartridge method
FDA Classification Name(s):	B-type natriuretic peptide test system (Class II)
FDA Guidance Documents:	"Class II Special Control Guidance Document for B-Type Natriuretic Peptide Premarket Notifications; Final Guidance for Industry and FDA Reviewers" - 11/30/2000
Predicate Device(s):	Roche Diagnostics Elecsys® proBNP immunoassay (K022516/K032646)

Device Description(s):

Method

The Dade Behring Dimension® NT-proBNP (PBNP) Flex® reagent cartridge method is an *in vitro* diagnostic test that consists of prepackaged reagents in a flexible plastic cartridge for use only on the Dimension® clinical chemistry system. The PBNP method is a one step enzyme immunoassay based on the "sandwich" principle. Sample is incubated with chromium dioxide particles coated with polyclonal antibodies which recognize epitopes located in the N-terminal part of proBNP, and a conjugate reagent [alkaline phosphatase (ALP)] labeled polyclonal antibody specific for a second independent epitope on NT-proBNP, to form a particle/NT-proBNP/conjugate sandwich. Unbound conjugate is removed by magnetic separation and washing. After separation and washing, the particle/NT-proBNP/conjugate sandwich is transferred to the cuvette where the sandwich-bound ALP triggers an amplification cascade.* ALP dephosphorylates synthetic flavin adenine dinucleotide phosphate (FADP) to produce FAD. FAD binds to apo D-amino acid oxidase and converts it to active holo D-amino acid oxidase. Each molecule of holo D-amino acid oxidase produces multiple molecules of hydrogen peroxide (H_2O_2). H_2O_2 in the presence of horseradish peroxidase (HRP), converts 3,5-dichloro-2-hydroxybenzenesulfonic acid (DCHBS) and 4-aminoantipyrine (4-AAP) to a colored product that absorbs at 510 nm. The color change measured is directly proportional to the concentration of proBNP present in the patient sample.

*Technology licensed from London Biotechnology, Ltd., London, U.K.

Intended Use:

Method

The Dimension® PBNP Flex® method is an *in vitro* diagnostic assay for the quantitative determination of N-terminal pro-brain natriuretic peptide (NT-proBNP) in human plasma. Measurements of NT-proBNP are used as an aid in the diagnosis and assessment of severity of individuals suspected of having congestive heart failure and for risk stratification of patients with acute coronary syndrome and heart failure.

Comparison to Predicate Device:

Method

A summary of the features of the Dade Behring Dimension® PBNP Flex® method and the predicate Roche Diagnostics Elecsys® proBNP immunoassay is provided in the following chart. The Dade Behring Dimension® PBNP Flex® method utilizes the Roche polyclonal (sheep) antibody/antigen set.

Feature	Dimension® PBNP (K041417)	Roche Elecsys® proBNP (K032646/K022516)
Intended Use	For the *in vitro* quantitative determination of N-terminal pro-brain natriuretic peptide in human plasma as an aid in the diagnosis and assessment of severity of individuals suspected of having congestive heart failure. The test is further indicated for the risk stratification of patients with acute coronary syndrome and heart failure.	For the *in vitro* quantitative determination of N-terminal pro-brain natriuretic peptide in human serum and plasma as an aid in the diagnosis of individuals suspected of having congestive heart failure. The test is further indicated for the risk stratification of patients with acute coronary syndrome and congestive heart failure.
Assay Type (detection)	immunoassay (photometric)	immunoassay (electrochemiluminescent)
Reportable Range	5 - 30,000 pg/mL	5 - 35,000 pg/mL
Antibody	Roche Diagnostics' polyclonal (sheep) antibody	polyclonal (sheep) antibody
Cut-off	125 pg/mL for patients less than 75 years and 450 pg/mL for patients 75 years and older	125 pg/mL for patients less than 75 years and 450 pg/mL for patients 75 years and older

Feature	Dimension® PBNP (K041417)	Roche Elecsys® proBNP (K032646/K022516)
Analytical Sensitivity	≤ 10 pg/mL	5 pg/mL
Functional Sensitivity	≤ 30 pg/mL	< 50 pg/mL
Analytical Specificity	Natercor® shows no significant cross reactivity,0 or 125 pg/mL NT-proBNP; sixteen other substances show no significant cross reactivity	Natercor® shows no significant cross reactivity, 300 pg/mL or 3000 pg/mL NT-proBNP; sixteen other substances show no significant cross reactivity
Interferences	No significant interference from: bilirubin ,conj. up to 60 mg/dL bilirubin, unconj. up to 20 mg/dL hemoglobin up to 1000 mg/dL triglycerides up to 3000 mg/dL rheumatoid factors up to 500 IU/mL	No significant interference from: bilirubin up to 35 mg/dL hemoglobin up to 1.4 g/dL triglycerides up to 4000 mg/dL rheumatoid factors up to 1500 IU/mL
Reference	Roche NT-proBNP antibody (1-76)	Roche NT-proBNP antibody (1-76)
Hook Effect	No effect up to 300,000 pg/mL	No effect up to 300,000 pg/mL
Calibration Interval	30 days - same reagent lot	30 days - same reagent lot
Sample Volume	50 uL	20 uL
Reproducibility	Within Run 2.2 % CV @ 159 ng/mL 1.8% CV @ 484.3 1.6% @ 1037.8 ng/mL 1.2% CV @ 184.7 ng/mL 1.9% CV @ 4062.4 ng/mL Total 5.7 % CV @ 159 ng/mL 3.7% CV @ 484.3 3.7% @ 1037.8 ng/mL 4.0% CV @ 184.7 ng/mL 3.1% CV @ 4062.4 ng/mL	Within Run 2.7% CV @ 175 ng/mL 2.4% CV @ 355 ng/mL 1.8% CV @ 434 ng/mL 1.9% CV @ 1068 ng/mL 1.8% CV @ 4962 ng/mL 1.8% CV @ 6781 ng/mL Total 3.2% CV @ 175 ng/mL 2.9% CV @ 355 ng/mL 2.6% CV @ 434 ng/mL 2.3% CV @ 1068 ng/mL 2.4% CV @ 4962 ng/mL 2.2% CV @ 6781 ng/mL

Comments on Substantial Equivalence:
Both the Dade Behring Dimension® PBNP and the Roche Elecsys® proBNP immunoassays are intended for the quantitative determination of NT-proBNP. Comparative data for human plasma samples demonstrate good analytical and clinical agreement between the methods.

Conclusion:
The Dade Behring Dimension® PBNP Flex® method and the predicate Roche Elecsys® proBNP immunoassay (K032646) are substantially equivalent based on their intended use and performance characteristics as described above.

George M. Plummer
Regulatory Affairs and Compliance Manager
August 27, 2004

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

NOV 19 2004

Mr. George Plummer
Regulatory Affairs and Compliance Manager
Dade Behring, Inc.
P.O. Box 6101
Newark, DE 19714

Re: k042347
Trade/Device Name: Dimension® NT-proBNP (PBNP) Flex® reagent cartridge method
Regulation Number: 21 CFR 862.1117
Regulation Name: B-type natriuretic peptide test system
Regulatory Class: Class II
Product Code: NBC
Dated: November 2, 2004
Received: November 3, 2004

Dear Mr. Plummer:

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 Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. 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 Parts 801 and 809); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820).

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 information about the application of labeling requirements to your device, or questions on the promotion and advertising of your device, please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at (301) 594-3084. 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 (301) 443-6597 or at its Internet address http://www.fda.gov/cdrh/dsma/dsmamain.html.

Sincerely yours,

Cornelia B. Rooks

Cornelia B. Rooks, MA
Acting Director
Division of Chemistry and Toxicology
Office of In Vitro Diagnostic Device
Evaluation and Safety
Center for Devices and
Radiological Health

Enclosure

Indications For Use Statement

510(k) Number (if known): K042347

Device Name:

Dimension® NT-proBNP (PBNP) Flex® reagent cartridge method

Indications for Use:

The Dimension® PBNP Flex® method is an *in vitro* diagnostic assay for the quantitative determination of N-terminal pro-brain natriuretic peptide (NT-proBNP) in human plasma. Measurements of NT-proBNP are used as an aid in the diagnosis of individuals suspected of having congestive heart failure and for risk stratification and severity assessment of patients with acute coronary syndrome and heart failure.

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

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

Carol Benson
Division Sign-Off

Office of In Vitro Diagnostic
Device Evaluation and Safety

510(k) K042347