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K043215

Section 1 D: 510(k) Summary of Safety and Effectiveness for FlowCARE PLG CD4 Reagent

1.0 General Information

Applicant Name and Address:	Beckman Coulter, Inc. Cellular Analysis Division 11800 SW 147 Avenue Miami, FL 33196-2500
Primary Contact:	Stan Sugrue, Ph.D. Senior Regulatory Affairs Specialist Telephone: (305) 380-4552 FAX: (305) 380-3618 E-mail: stan.sugrue@coulter.com
Date:	November 18, 2004
Device Trade Name(s):	FlowCARE™ PLG CD4 Reagent
Device Generic Name(s):	Lymphocyte Immunophenotyping monoclonal antibody reagents
Device Classification:	The FlowCARE PLG CD4 Reagent is a Class II medical device ((81 GKZ).

2.0 Predicate Device

The FlowCARE PLG CD4 reagent claims substantial equivalence to the tetraONE SYSTEM for EPICS XL Flow Cytometry SYSTEM with CYTO-STAT tetraCHROME CD45-FITC/CD4-RD1/CD8-ECD/CD3-PC5 Monoclonal Antibody Reagent for the enumeration of CD4 T-Lymphocytes.

FDA 510(k) Number(s): K990172

3.0 Device Description

The FlowCARE PLG CD4 Reagent consists of a two-color antibody reagent composed of CD45-FITC and CD4-PE. The assay is performed on the EPICS XL, Cytomics FC 500, or equivalent Flow Cytometer using appropriate quality control reagents in combination with an optional absolute count reagent, Flow-Count™ Fluorospheres for determination CD4 absolute counts as a single platform measurement, or in combination with a White Blood Cell Count from a hematology analyzer as a dual platform measurement.

4.0 Principle of Method:

The test depends on the ability of a monoclonal antibody to bind to the surface of cells expressing discrete antigenic determinants. Specific cell staining is accomplished by incubating whole blood with the monoclonal antibody reagent. The FlowCARE PLG CD4 Monoclonal Antibody Reagent is a combination of two murine monoclonal antibodies, each conjugated to a specific fluorochrome and specific for different cell surface antigens.

Red blood cells are lysed with the COULTER IMMUNOPREP™ Reagent System and COULTER TQ-PREP™ Workstation or equivalent. The remaining white blood cells are analyzed by flow cytometry using a sequential gating strategy. The total WBC gate is defined in the first histogram (log SS vs CD45-FITC) by the inclusion of all CD45+ events with low, medium and high Side Scatter. A second histogram (log SS vs CD4-PE), gated on the total WBC defined by the first gate, identifies CD4+ lymphocytes by setting a region to include $CD4^{bright+}$ events with low SS. The CD4% of WBC obtained from this region is used to calculate the CD4 absolute count by multiplication with the WBC count from the hematology analyzer. CD4% of lymphocytes is obtained by defining a lymphocyte gate in the first histogram identified as the cluster of events exhibiting bright CD45+ fluorescence

and low SS. The percentage is obtained by calculation of the CD4+ gated events divided by the CD45+ lymphocyte events.

5.0 Comparison to Predicate

Comparison	Characteristic	tetraONE System for EPICS XL Flow Cytometry System (Predicate)	FlowCARE PLG CD4 Reagent
Similarities	T-Lymphocytes enumeration	Enumerates CD4+ T-Lymphocytes	Enumerates CD4+ T-Lymphocytes
	Analytical instrumentation	Deployed on EPICS® XL-MCL™ flow cytometer	Can be deployed on EPICS® XL-MCL™ flow cytometer
	Analysis Reagents	Uses CYTO-STAT® tetraCHROME™ CD45-FITC/CD4-RD1/CD8-ECD/CD3-PC5	CD45-FITC and CD4-PE (RD1) monoclonal dye conjugates are identical to CD45-FITC/CD4-RD1 tetraCHROME™ reagent components
	Analysis Reagents	Uses Flow-Count™ Fluorospheres absolute count reagent	Can use Flow-Count™ Fluorospheres absolute count reagent or equivalent
	Setup Reagents	• Flow-Set™ Fluorospheres • CYTO-COMP™ Cell Kit • CYTO-COMP™ Reagent Kit	Same or equivalent reagents
	QC Reagents	• IMMUNO-TROL™ Control Cells • IMMUNO-TROL™ Low Control Cells	Same or equivalent reagents
Differences	Analysis Reagents	Uses 4-color fluorochrome reagent (CYTO-STAT® tetraCHROME™ CD45-FITC/CD4-RD1/CD8-ECD/CD3-PC5)	Uses 2-color fluorochrome reagent (CD45-FITC and CD4-PE)
	Analysis Software	System II™ Automated analysis using cellSTAT 3D™ algorithm	Manual analysis using customer created protocols according to package insert
	Flow Cytometer	EPICS® XL-MCL™ flow cytometry system only	EPICS XL-MCL, Cytomics FC500, or any equivalent flow cytometry system
	Specimen Age	• ≤ 6 hours (with automated software) • ≤ 72 hours (without automated software, tetraCHROME CD45-FITC/CD4-RD1/CD8-ECD/CD3-PC5)	≤ 120 hours (5 days)* * The specimen age limit for dual platform measurement is dependent upon the claims for the hematology analyzer but not to exceed five days.
	Intended Use	• Enumeration of total T, B, and NK lymphocytes • Enumeration of three major T-lymphocyte subset populations (CD3, CD4, CD8)	Enumeration of CD4+ T-Lymphocytes only

6.0 Indications for Use: (Intended Use Statement from Package insert)

The FlowCARE PLG CD4 Reagent is for use on the COULTER® EPICS® XL™/XL-MCL™ or equivalent flow cytometer. The reagent kit combines two fluorescent-labeled monoclonal antibodies in a single reagent formulation. It is intended "For In Vitro Diagnostic Use" for the enumeration of CD4 absolute cell count and CD4 lymphocyte percentage in combination with a White Blood Cell (WBC) Count from a hematology instrument as a dual platform measurement, or independently when used in combination with Flow-Count™ Fluorospheres as a single platform measurement.

7.0 Conclusion:

The FlowCARE™ PLG Reagent is substantially equivalent to the previously cleared tetraONE System for EPICS XL Flow Cytometry System with CYTO-STAT® tetraCHROME™ CD45-FITC/CD4-PE/CD8-ECD/CD3-PC5 Monoclonal Antibody Reagent for the enumeration of the CD4 T-Lymphocyte subpopulation.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
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JAN 19 2005

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Re: k043215
Trade/Device Name: FlowCARE™ PLG CD4 Reagent
Regulation Number: 21 CFR 864.5220
Regulation Name: Automated differential cell counter
Regulatory Class: Class II
Product Code: GKZ
Dated: November 22, 2004
Received: November 23, 2004

Dear Dr. Sugrue:

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 (240) 276-0484. 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/industry/support/index.html

Sincerely yours,

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

Enclosure

Section 1C: INDICATIONS FOR USE

510(k) Number (if known): ~~Not assigned~~ K043215

Device: FlowCARE™ PLG CD4 Reagent

Intended Use

The FlowCARE PLG CD4 Reagent is for use on the Coulter® EPICS® XL™/XL-MCL™ or equivalent flow cytometer. The reagent kit combines two fluorescent-labeled monoclonal antibodies in a single reagent formulation. It is intended "For In Vitro Diagnostic Use" for the enumeration of CD4 absolute cell count and CD4 lymphocyte percentage in combination with a White Blood Cell (WBC) Count from a hematology instrument as a dual platform measurement, or independently when used in combination with Flow-Count ™ Fluorospheres as a single platform measurement.

The FlowCARE PLG CD4 Reagent provides the ability to measure CD4+ cells by utilizing a pan-leukocyte gating (PLG) approach where CD4+ T-cell enumeration is based on the use of all leukocytes, instead of on lymphocytes only, as the matching common denominator between the hematology generated WBC and the flow cytometric enumeration. A sequential gating strategy is used to include all CD45+ leukocytes and to measure the CD4+% of total leukocyte values generated from this gate.

21 CFR 864.5220

Lymphocyte Immunophenotyping monoclonal antibody reagents

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Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use X **OR** **Over-The-Counter** _____
Use
(Per 21 CFR 801.109)

Division Sign-Off

Office of In Vitro Diagnostic Device Evaluation and Safety

510(k) K043215