JUN 21 1999

K991402

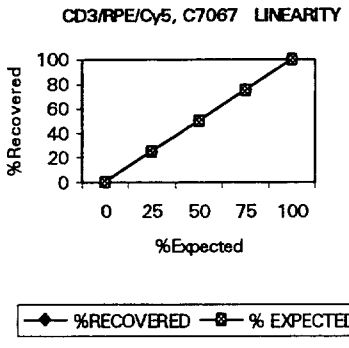
510(k) Summary

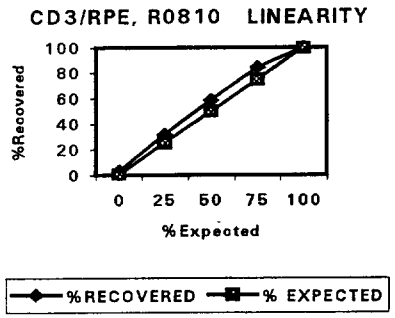
Submitter:	DAKO Corporation 6392 Via Real Carpinteria, CA 93013 805-566-6655
Contact:	Gretchen M. Murray, Ph.D.
Date Summary Prepared:	April, 1999
Device Names:	DAKO® Mouse Anti-Human T-cell, CD3/RPE-Cy5, Clone UCHT1 (Product Code No. C7067) and DAKO® Mouse Anti-Human T-cell, CD3/RPE, clone UCHT1 (Product Code No. R0810)
Device Classification:	Class II according to 21 CFR 864.5220, on the basis that monoclonal antibodies are accessories for automated differential cell counters.
Panel:	The device classification is under the Hematology and Pathology Devices panel, Division of Clinical Laboratory Devices.
Predicate Device:	DAKO Mouse anti-human T-cell, CD3/FITC, Clone UCHT1 Code No.F0818
Devise Description:	Monoclonal Mouse Anti-Human T-cell, CD3/RPE-Cy5 conjugated, Clone UCHT1 (Code No. C7067) and Monoclonal Mouse Anti-Human T-cell, CD3/RPE conjugated, Clone UCHT1 (Code No. R0810) are specific for T-lymphocyte cluster determinants as evaluated by the International Workshop on Human Leukocyte Differentiation Antigens. UCHT1 CD3-specific monoclonal antibody was designated B28 antibody at the Second Workshop (Reinherz, EL, Haynes, BF, Nadler, LM, Bernstein, ID, eds. Leukocyte Typing II, Vol. 2. New York-Berlin-Heidelberg-Tokyo: Springer Verlag, 1986.) Purified monoclonal mouse anti-human CD3 is produced in tissue culture, dialyzed and conjugated with either R-phycoerythrin (RPE) covalently coupled to cyanin 5 (Cy5) or R-phycoerythrin (RPE). One ml (1.0 ml) containing the conjugated antibody is supplied in 0.05M Tris-HCl buffer, pH 7.2, 15mM NaN_3, 0.1M NaCl, stabilized with 1% stabilzing protein.
Intended Use:	For *In Vitro* Diagnostic Use Monoclonal Mouse Anti-Human T-cell, CD3/RPE-Cy5 conjugated, Clone UCHT1 (Code No.C7067) (Anti-CD3/RPE-Cy5) and Monoclonal Mouse Anti-Human T-cell, CD3/RPE conjugated, Clone UCHT1 (Code No. R0810) (Anti-CD3/RPE) have been developed for use in flow cytometry for the analysis of T-cells in peripheral blood. These reagents allow simultaneous detection and quantification of CD3-positive cells (T-cells) in normal and pathological conditions such as immunodeficiency disorders. Each reagent is one component of the suggested monoclonal antibody (MAb) combinations for routine immunophenotyping of lymphocytes in peripheral blood.

Comparison of Technological Characteristics:

Linearity:

Binding linearity was determined over serial dilutions of a cell line known to express the antigen diluted with a cell line that has no antigenic sites. For Anti-CD3/RPE-Cy5, C7067 and Anti-CD3/RPE, R0810 the cell line without antigenic reactivity is Raji cells, while the cell line with antigenic sites is JM cells. Five dilutions were tested, with a linear equation calculated from the results. The equation for Anti-CD3/RPE-Cy5, C7067, y = -0.02 + 1.0x,





R^2 = 0.999, and Anti-CD3/RPE y=2.84 + 1.0x, R^2 = 0.999.

Reproducibility:

Ten replicates from peripheral blood of three donors were tested for reproducibility of Anti-CD3/RPE-Cy5 and run on two flow cytometers from different manufacturers at three concentrations of antigen. Different levels of CD3+ lymphocytes were selected from a population of normal and abnormal peripheral blood samples. Each level of CD3 was analyzed within one day on both machines.

FACScan Anti-CD3/RPE-Cy5	Mean % CD3+	± 1 SD	%CV	n
High Level	71.51	0.53	0.01	10
Medium Level	37.54	0.58	0.02	10
Low Level	10.76	0.40	0.04	10

Profile II Anti-CD3/RPE-Cy5	Mean % CD3+	± 1 SD	%CV	n
High Level	71.44	0.74	0.01	10
Medium Level	36.21	0.86	0.02	10
Low Level	12.35	0.32	0.03	10

FACScan Anti-CD3/RPE	Mean % CD3+	± 1 SD	%CV	n
High Level	72.07	1.11	0.02	10
Medium Level	38.50	0.87	0.02	10
Low Level	11.03	0.51	0.05	10

Profile II Anti-CD3/RPE	Mean % CD3+	± 1 SD	%CV	n
High Level	71.53	0.74	0.01	10
Medium Level	36.01	0.49	0.01	10
Low Level	10.79	0.53	0.05	10

Specificity:

Specificity of Anti-CD3/RPE-Cy5 and Anti-CD3/RPE has been verified by tests performed on five apparently healthy adult donors of various races at DAKO Corporation. Cell populations tested were RBC's, granulocytes, monocytes, lymphocytes and platelets. The results indicate antibody binding of Anti-CD3/RPE-Cy5 and Anti-CD3/RPE are specific for lymphocytes. Lymphocytes bound to Anti-CD3/RPE-Cy5 antibodies on an average of 72%, representative of the T-cell population. Approximately 2% of monocytes bound with the Anti-CD3/RPE-Cy5. However, monocyte binding can be excluded from the lymphocyte analysis by proper gating on lymphocytes. Lymphocytes bound to Anti-CD3/RPE antibodies on an average of 70%, representative of the T-cell population. Approximately 9% of monocytes bound with the Anti-CD3/RPE.

DAKO Anti-CD3/RPE-Cy5 Specificity

	%Positive Red Blood Cells	% Positive Granulocytes	% Positive Monocytes	% Positive Lymphocytes	% Positive Platelets
Average (n=5) (range)	0.02 (0.0-0.1)	1.50 (0.9-2.2)	1.82 (1.1-2.7)	71.90 (60.3-78.6)	0.12 (0.0-0.3)

DAKO Anti-CD3/RPE Specificity

	% Positive Red Blood Cells	% Positive Granulocytes	% Positive Monocytes	% Positive Lymphocytes	% Positive Platelets
Average (n=5) (range)	0.08 0.0-0.3	0.60 0.4-0.7 (n=4)	8.52 1.6-16.3	69.92 58.4-75.9	1.08 0.1-3.8

Predicate Correlation:

Correlation of Anti-CD3/RPE-Cy5, C7067 and Anti-CD3/RPE, R0810 to a predicate Anti-CD3/FITC, F0818 reagent, was determined by testing duplicate samples with each reagent across 153 normal, apparently healthy individuals at three geographically separate laboratories. Linear regression analysis of the data gave the following equations and Pearson correlation's.

$y_{(\text{DAKO Anti-CD3/RPE-Cy5+ Lymphocytes})} = 6.22 + 0.92\, x_{(\text{DAKO Anti-CD3/FITC + Lymphocytes})}$.
$R^2 = 0.9208$
$n = 150$

$y_{(\text{DAKO Anti-CD3/RPE+ Lymphocytes})} = 9.85 + 0.87\, x_{(\text{DAKO Anti-CD3/FITC + Lymphocytes})}$.
$R^2 = 0.8040$.
$n = 150$

In addition, samples from patients with illnesses were compared, and their data added to the results of the testing of the 150 apparently healthy individuals. Linear correlation was performed on the total database. Linear regression analysis gave the following equation and R^2:

$y_{(\text{DAKO Anti-CD3/RPE-Cy5+ Lymphocytes})} = 2.43 + 0.98\, x_{(\text{DAKO Anti-CD3/FITC + Lymphocytes})}$.
$R^2 = 0.9750$
$n = 177$

$y_{(\text{DAKO Anti-CD3/RPE+ Lymphocytes})} = 1.20 + 0.99\, x_{(\text{DAKO Anti-CD3/FITC + Lymphocytes})}$.
$R^2 = 0.9870$
$n = 176$

These equations indicate that Anti-CD3/RPE-Cy5, C7067 and Anti-CD3/RPE, R0810 reagents are comparable on 1:1 basis to the Anti-CD3/FITC, F0818 reagent.

Specific Device Information

Device Description

Monoclonal Mouse Anti-Human T-cell, CD3/RPE-Cy5-conjugated, C7067, and, Monoclonal Mouse Anti-Human T-cell, CD3/RPE, R0810 are specific for T-lymphocyte cluster determinants as evaluated by the International Workshop on Human Leukocyte Differentiation Antigens. UCHT1 CD3-specific monoclonal antibody was designated B28 antibody at the Second Workshop (Reinherz, EL, Haynes, BF, Nadler, LM, Bernstein, ID, eds. Leukocyte Typing II, Vol. 2. New York-Berlin-Heidelberg-Tokyo: Springer Verlag, 1986.) Purified monoclonal mouse anti-human CD3 is produced in tissue culture, dialyzed and conjugated with R-phycoerythrin (RPE) covalently coupled to cyanin 5 (Cy5), or conjugated with R-phycoerythrin (RPE). One ml (1.0 ml) containing the conjugated antibody is supplied in 0.05M Tris-HCl buffer, pH 7.2, 15mM NaN_3, 0.1M NaCl, stabilized with 1% carrier protein.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

JUN 21 1999

Gretchen M. Murray, Ph.D.
Regulatory Affairs Manager
DAKO Corporation
6392 Via Real
Carpinteria, California 93013

Re: K991402
Trade Name: Monoclonal Mouse Anti-Human T-cell, CD3 Clone UCHT1 RPE-CY5 or RPE Conjugated
Regulatory Class: II
Product Code: GKZ
Dated: April 20, 1999
Received: April 22, 1999

Dear Dr. Murray:

We have reviewed your Section 510(k) notification of intent to market the device referenced above and we 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). 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 (Premarket Approval), 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 895. A substantially equivalent determination assumes compliance with the Current Good Manufacturing Practice requirements, as set forth in the Quality System Regulation (QS) for Medical Devices: General regulation (21 CFR Part 820) and that, through periodic QS inspections, the Food and Drug Administration (FDA) will verify such assumptions. Failure to comply with the GMP regulation may result in regulatory action. In addition, FDA may publish further announcements concerning your device in the Federal Register. Please note: this response to your premarket notification submission does not affect any obligation you might have under sections 531 through 542 of the Act for devices under the Electronic Product Radiation Control provisions, or other Federal laws or regulations.

Under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88), this device may require a CLIA complexity categorization. To determine if it does, you should contact the Centers for Disease Control and Prevention (CDC) at (770) 488-7655.

This letter will allow you to begin marketing your device as described in your 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 and additionally 809.10 for in vitro diagnostic devices), please contact the Office of Compliance at (301) 594-4588. Additionally, for questions on the promotion and advertising of your device, please contact the Office of Compliance at (301) 594-4639. Also, please note the regulation entitled, "Misbranding by reference to premarket notification"(21 CFR 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers 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,

Steven Gutman

Steven I. Gutman, M.D, M.B.A.
Director
Division of Clinical
Laboratory Devices
Office of Device Evaluation
Center for Devices and
Radiological Health

Enclosure

510(k) Number: K991402

Device Name: Monoclonal Mouse Anti-Human T-cell, CD3 Clone UCHT1 RPE-Cy5 Conjugated

Indications For Use:

Monoclonal Mouse Anti-Human T-cell, CD3, Clone UCHT1, RPE-Cy5 conjugated, has been developed for use in flow cytometry for the analysis of T-cells. This reagent allows simultaneous detection and quantification of CD3-positive cells (T-cells) in normal and pathological conditions such as immunodeficiency disorders. It is one component of the suggested monoclonal antibody (MAb) combinations for routine immunophenotyping of lymphocytes in peripheral blood.

Immunophenotyping of lymphocytes is widely applied for diagnosis of immunodeficiencies. DAKO Anti-CD3/RPE-Cy5 is one of the reagents utilized when performing immunophenotyping of lymphocytes.

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

Peter E. Maker

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K991402

Prescription Use ✓ OR **Over-The-Counter Use**____
(Per 21 CFR 801.109) (Per 21 CRF 801.110)

IVD Use_____
(Per 21 CFR 801.119)

(Optional Format 1-2-96)

510(k) Number:
Device Name: Monoclonal Mouse Anti-Human T-cell, CD3 Clone UCHT1, RPE Conjugated

Indications For Use:

Monoclonal Mouse Anti-Human T-cell, CD3, Clone UCHT1, RPE conjugated, has been developed for use in flow cytometry for the analysis of T-cells. This reagent allows simultaneous detection and quantification of CD3-positive cells (T-cells) in normal and pathological conditions such as immunodeficiency disorders. It is one component of the suggested monoclonal antibody (MAb) combinations for routine immunophenotyping of lymphocytes in peripheral blood.

Immunophenotyping of lymphocytes is widely applied for diagnosis of immunodeficiencies. DAKO Anti-CD3/RPE is one of the reagents utilized when performing immunophenotyping of lymphocytes.

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

Peter E. Maker

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K99M02

Prescription Use ✓
(Per 21 CFR 801.109)

OR

Over-The-Counter Use____
(Per 21 CRF 801.110)

IVD Use_____
(Per 21 CFR 801.119)

(Optional Format 1-2-96)