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K984216

COULTER

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Date: January 22, 1999

Title: Summary of Safety and Effectiveness Information For 510(k) Premarket Notification

Product: IMMUNO-TROL™ Control Cells

Company: Coulter Corporation
11800 SW 147 Avenue
Miami, FL 33196-2500

Contact: Dr. Marion S. Gaide (M/C: 31-B06)
Senior Regulatory Affairs Specialist
Premarket Regulatory Affairs

Telephone: (305) 380-2594

Common or Usual or Classification Name: Whole Blood Control for Imunophenotyping

Product Classification: Product Code: 81 JPK; C.F.R. Section: 864.8625; Classification Panel: Hematology and Pathology Devices; Device Class: II

Intended Use:

IMMUNO-TROL™ Control Cells (Immuno-Trol) is an assayed, lysable whole blood quality control product for immunophenotyping analysis using monoclonal antibody reagents and flow cytometry. It provides a positive cell control that is processed in the same manner as a whole blood sample. This allows verification of reagent performance, and the methods used for staining of targeted cells, lysing erythrocytes, and analyzing samples by flow cytometry. CD populations intended "For In Vitro Diagnostic Use" and those intended "For Research Use Only. Not For Use In Diagnostic Procedures." are given in separate tables in the **TABLE OF EXPECTED RESULTS** section of the Immuno-Trol package insert.

Substantial Equivalence: 510(k) Premarket Notification: K894651
COULTER™ CYTO-TROL™ Control Cells Kit (CYTO-TROL)

Product Comparison:

Immuno-Trol is essentially identical to the combined capabilities and intended uses of the two Predicate System components, Normal Whole Blood (NWB) and CYTO-TROL. It also achieves the *same* purpose as two *other* Hematology Quality Control Materials for immunophenotyping by flow cytometry currently distributed "For In Vitro Diagnostic Use." Similar to CYTO-TROL, Immuno-Trol provides an assayed positive cell control material consisting of leukocytes with surface antigens detectable by monoclonal antibodies using, for example, CYTO-STAT®, CYTO-STAT®/COULTER CLONE® and IOTest® Reagents. However, Immuno-Trol expands the capabilities of CYTO-TROL by featuring more surface antigens. The NWB component of the Predicate System also consists of leukocytes with surface antigens detectable by monoclonal antibodies and may be used in lieu of an assayed cell control product. However, NWB is unassayed material and the specific surface antigens present in a sample are unknown prior to immunophenotyping analysis using one or more monoclonal antibody reagents and flow cytometry. Further, when using NWB to QC immunophenotyping parameters and procedures, the percent positive and absolute count results obtained for targeted cellular populations must be compared to results representative of the Site's normal human donor pool. Similar to NWB, the erythrocyte component of Immuno-Trol can be lysed using a whole blood lysing method such as COULTER® ImmunoPrep™ Reagent System and Workstation (ImmunoPrep). NWB and CYTO-TROL are the same in that the Standard (Indirect) Method which combines hematology and flow cytometry results can be used to calculate absolute count results. Immuno-Trol and NWB are the same in that both can be used with the absolute count reagent, COULTER® Flow-Count™ Fluorospheres (Flow-Count) for the direct determination of absolute count by flow cytometry. Finally, Immuno-Trol, NWB and CYTO-TROL are the same in that the gating population, gating method and surface antigens detected are defined by the reagent(s) being assessed for monoclonal antibody activity.

Product Testing: Product testing to assess the performance of Immuno-Trol is described below. Studies were designed in line with instructions for use in the product package insert and performance specifications. NWB and CYTO-TROL samples were also assayed for comparison purposes. The results of product testing demonstrated that Immuno-Trol meets all performance specifications and provides Percent Positive (%) and Absolute Count Results comparable to those of NWB and CYTO-TROL and also within the Acceptance Criteria for each leukocyte surface antigen given in the Immuno-Trol package insert.

1. Vial-to-Vial Reproducibility:
   Reproducibility (that is, Homogeneity) was assessed by measuring the Red Blood Cell (RBC) and White Blood Cell (WBC) concentrations of filled vials of Immuno-Trol on the COULTER® STKS™ Analyzer (STKS). The filled vials were sampled from Immuno-Trol lots at regular intervals across the fill. The study results were expressed in terms of cells/mL and all values met the Acceptance Criteria. These data demonstrate the consistency and reproducibility of Immuno-Trol filled vials.

2. Lot-to-Lot Reproducibility:
   Reproducibility was assessed by testing Immuno-Trol on different instrument-operator combinations using one-color, two-color, three-color and four-color monoclonal antibody reagents. Testing produced overall percent positive (%) and absolute count (as applicable) results for the leukocyte surface antigens given in the Immuno-Trol Package Insert. The study results were expressed in terms of percent positive (%) and absolute count (cells/µL) and all values met the Acceptance Criteria. These data demonstrate the consistency and reproducibility of Immuno-Trol between lots.

3. Stability Studies:
   Closed Vial, Open Vial and Stored Prepared Sample stability characteristics and claims for Immuno-Trol were assessed with two study protocols: "Closed Vial: 90 days at 2-8°C; Open Vial: 30 days at 2-8°C" and "Stored Prepared Sample: 2 hours at 20-25°C; 24 hours at 2-8°C." Immuno-Trol was tested using one-color, two-color, three-color and four-color monoclonal antibody reagents under the different storage and temperature conditions over test periods extending up to and beyond the respective 90-day and 30-day dating claims. The study results were expressed in terms of percent positive (%) and absolute count (cells/µL) and all values met the Acceptance Criteria. These data demonstrate Immuno-Trol meets both reagent and sample stability characteristics and claims under the storage and temperature conditions studied.

4. Absolute Count Method Verification:
   Absolute count method was assessed by testing Immuno-Trol using three-color and four-color monoclonal antibody reagents and the Flow-Count (Direct) Method and the Standard (Indirect) Method for absolute count determination. NWB was also tested under the same conditions. The study results were expressed in terms of percent positive (%) and absolute count (cells/µL) and all values met the Acceptance Criteria. In addition, both the Flow-Count (Direct) Method and the Standard (Indirect) Method provided essentially identical absolute count results for Immuno-Trol and NWB. These data clearly demonstrate the suitability of using the Flow-Count (Direct) Method for absolute count determination of Immuno-Trol leukocyte surface antigens.

5. Assay Precision:
   Assay precision (that is, reproducibility) was assessed by testing Immuno-Trol on different instrument-operator combinations and over multiple test days using one-color, two-color, three-color and four-color monoclonal antibody reagents. NWB and CYTO-TROL were also tested under the same conditions. The study results were expressed in terms of percent positive (%) and absolute count (cells/µL) and analyzed in terms individual and combined assay precision for the various study parameters. All values met the Acceptance Criteria. In addition, Immuno-Trol, NWB and CYTO-TROL varied little as evidenced by the means, standard deviations and coefficients of variation for the different sets of measurements. These data demonstrate Immuno-Trol performs in a manner comparable to the Predicate System components, NWB and CYTO-TROL.

Marion S. Gaide — January 22, 1999

Marion S. Gaide, Ph.D.
Senior Regulatory Affairs Specialist
Corporate Regulatory Affairs

Date

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

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Marion S. Gaide, Ph.D.
Senior Regulatory Affairs Specialist
Premarket Regulatory Affairs
Coulter Corporation
11800 SW 147 Avenue
Miami, Florida 33196-2500

Re: K984216
Trade Name: IMMUNO-TROL™ Control Cells
Regulatory Class: II
Product Code: JPK
Dated: February 22, 1999
Received: February 23, 1999

Dear Dr. Gaide:

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

INDICATIONS FOR USE

510(k) Number (if known): K984216

Device Name: IMMUNO-TROL™ Control Cells

Indications For Use:

IMMUNO-TROL™ Control Cells (Immuno-Trol) is an for an assayed, lysable whole blood quality control product for immunophenotyping analysis using monoclonal antibody reagents and flow cytometry. It provides a positive cell control that is processed in the same manner as a whole blood sample. This allows verification of reagent performance and the methods used for staining targeted cells, lysing erythrocytes, and analyzing samples by flow cytometry. CD populations intended "For In Vitro Diagnostic Use" and those intended "For Research Use Only. Not For Use In Diagnostic Procedures." are given in separate tables in the **TABLE OF EXPECTED RESULTS** section of the Immuno-Trol package insert.

Immunophenotyping analysis by flow cytometry involves the identification and enumeration of targeted cells in whole blood samples. Whole blood samples are stained with monoclonal antibodies and erythrocytes are lysed prior to flow cytometric analysis. A positive cell control is required to verify reagent performance, sample performance, sample preparation methods, and staining procedures. A positive cell control should mimic a representative whole blood sample in terms of monoclonal antibody performance, erythrocyte lysing, and flow cytometric analysis.

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K984216

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

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