

XI. SUMMARY OF SAFETY AND EFFECTIVENESS

**Product:**

QUIDEL CH50 Eq EIA

**Manufacturer:**

QUIDEL Corporation  
10165 McKellar Court  
San Diego, CA 92121

**Device Classification:**

The device, QUIDEL CH50 Eq EIA, is similar to other FDA-cleared devices used to measure by immunochemical techniques complement components C1<sub>q</sub>, C1<sub>r</sub>, C1<sub>s</sub>, C2, C3, C4, C5, C6, C7, C8 and C9 in serum, other body fluids and tissues. Measurements of these proteins aid in the diagnosis of immunologic disorders, especially those associated with deficiencies of complement components (21 CFR 866.5240).

The Food and Drug Administration (FDA) published a final regulation in the Federal Register classifying Complement components immunological test system as Class II.

**Intended Use:**

The QUIDEL CH50 Eq EIA measures the total classical complement pathway activity in human serum, thereby allowing detection of a deficiency of one or more of the complement components C1 through C9. The CH50 Eq EIA is for laboratory and professional use.

**Physiologic Basis for the Test:**

The classical complement pathway is triggered by the binding of C1<sub>q</sub> component of C1 to immune complexes. This activation results in a cascade of enzymatic and non-enzymatic reactions, culminating in the formation of terminal complement complexes (TCC). Under standard conditions the level of TCC which can be generated in serum is a quantitative expression of the serum's total classical complement activity.

The traditional method for measuring the total classical complement activity in serum is the CH50 test. This test is a lytic assay which uses antibody-sensitized sheep erythrocytes (EA) as the activator of the classical complement pathway and various dilutions of the test serum to determine the amount required to give 50% lysis. The percent hemolysis is determined spectrophotometrically. The CH50 test is an indirect measure of TCC, since the TCC themselves are directly responsible for the hemolysis which is measured.

The QUIDEL CH50 Eq EIA provides a direct measure of the total classical complement activity in serum by quantifying the amount of TCC generated under standard conditions. The test uses a monoclonal antibody to a unique neoantigen to capture the TCC analyte. Since both the QUIDEL CH50 Eq EIA and the CH50 test rely on the generation of TCC and correlate, the QUIDEL CH50 Eq EIA's results are expressed in CH50 unit equivalents per milliliter.

### **Principle of the Test:**

The QUIDEL CH50 Eq EIA for quantifying the total classical complement activity in human serum involves three basic procedures: (1) complement activation; (2) sample dilution; and, (3) assay for terminal complement complexes (TCC).

To activate the classical complement pathway, undiluted human serum samples and the Controls are added to microassay wells containing the complement Activator. During an incubation the classical pathway of complement is triggered and TCC are generated.

In the second step, the activated sera are diluted in microassay wells or test tubes and dispensed, together with the Standards, directly into a precoated microassay plate. The TCC present in the activated samples bind to the monoclonal antibodies coating the surface of the microassay wells.

In the third step, the TCC microassay plate is washed and loaded with an HRP-conjugate which will bind to the bound TCC. After washing, the TCC microplate is loaded with a chromogenic enzyme substrate. After incubation a reagent is added to stop color development. The absorbancies ( $A_{405}$  values) generated with the Controls, Standards and test specimens are measured spectrophotometrically. The color intensity of the reaction mixture is proportional to the concentration of TCC present and to CH50 units. Using the kit standard curve, assay results are expressed in CH50 unit equivalents per milliliter (CH50 U Eq/mL).

### **Safety and Effectiveness:**

Numerous studies were undertaken to document the performance characteristics and the substantial equivalence of the QUIDEL CH50 Eq EIA to other commercially available products. These studies included the following:

- The test was shown to be similar to other commercially available tests in terms of features and intended use.
- The test was shown to have good intra- and inter-assay precision.
- Lot-to-lot consistency analyses showed the test to be reproducibly manufacturable.
- Potentially interfering substances were shown not to interfere with the test's performance.
- Two hundred and twenty six (226) patient samples were tested at a major clinical reference laboratory in the United States and evaluated by Receiver Operator Curve (ROC) Analysis. By this method the overall accuracy of the QUIDEL CH50 Eq EIA, when compared to the combined results from three hemolytic and one EIA-based assay, was greater than 97%.
- Stability studies are underway to establish the shelf-life of the product as well as its optimal storage and shipping conditions.

### **Conclusion:**

These studies demonstrated the substantial equivalence of the QUIDEL CH50 Eq EIA to existing products already marketed. They further demonstrated the suitability of the product for laboratory and professional use. Such studies are a critical element in establishing the fundamental safety and effectiveness of the product and its appropriateness for commercial distribution.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

JUL 29 1998

Food and Drug Administration  
2098 Gaither Road  
Rockville MD 20850

Mr. Edward J. McMullen  
Manager, Regulatory Compliance  
Quidel Corporation  
10165 McKellar Court  
San Diego, California 92121

Re: K974111/S1  
Trade Name: QUIDEL CH50 Eq EIA  
Regulatory Class: II  
Product Code: DAE  
Dated: May 29, 1998  
Received: June 2, 1998

Dear Mr. McMullen:

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 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 requirement, 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.

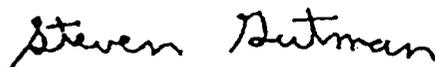
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Under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88), this device may require a CLIA complexity categorization. To determine if it does, you should contact the Centers for Disease Control and Prevention (CDC) at (770)488-7655.

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 at (301) 443-6597 or at its internet address "<http://www.fda.gov/cdrh/dsmamain.html>"

Sincerely yours,



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 (if known): K974111

Device Name: QUIDEL CH50 Eq EIA

Indications for Use:

The QUIDEL CH50 Eq EIA intended to measure the total classical complement pathway activity in human serum, thereby allowing detection of a deficiency of one or more of the complement components C1 through C9. The QUIDEL CH50 Eq EIA is intended for laboratory and professional use.

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Concurrence of CDRH, Office of Device Evaluation (ODE)

*John E. Mahan*  
(Division Sign-Off)  
Division of Clinical Laboratory Devices  
510(k) Number K974111

Prescription Use   
(Per 21 CFR 801.109)

OR

Over-The Counter Use

(Optional Format 1-2-96)