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PREMARKET NOTIFICATION FOR CHLAMYDIATROL™ AG

510(k) SUMMARY

Prepared June, 1997

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1.0 INTRODUCTION

1.1 Name and Intended Use

ChlamydiaTrol™ Ag is a liquid unassayed quality control reagent intended for use with *in vitro* diagnostic assay procedures for the qualitative detection of *Chlamydia trachomatis* antigen. ChlamydiaTrol Ag reagents are designed for routine use to provide a means of estimating precision and monitoring performance of manual and automated test systems.

1.2 Summary and Principles of the Procedure

Monitoring the performance of laboratory test procedures through use of a well designed quality assurance program provides added confidence in the reliability of test results obtained for unknown specimens. Use of independent quality assurance reagents provides a means of monitoring performance of laboratory procedures on a routine basis and analyzing system performance on a retrospective basis. Routine monitoring of test performance will assist the laboratorian in identifying random or systematic errors and detecting trends, biases or other problems as they occur. A laboratory's analyses can be compared with those of other laboratories or with its own prior analyses by routinely analyzing test samples that have been obtained from a large common pool. Inclusion of ChlamydiaTrol Ag reagents in every test run will provide the laboratory with a means of estimating precision and reproducibility, and monitoring overall system performance on a run-to-run basis. Proper use of ChlamydiaTrol Ag reagents can assist laboratories in analyzing and identifying problems in a test run and improving the quality and proficiency of routine testing.

ChlamydiaTrol Ag reagents have been designed for use with *in vitro* diagnostic assay procedures for purposes of monitoring assay performance and maintaining quality assurance. ChlamydiaTrol Ag reagents are prepared using elementary bodies derived from *Chlamydia trachomatis* and contain human proteins and stabilizers. Source materials have been processed and treated to eliminate unwanted components and to inactivate infectious agents. The reagent has been formulated to ensure stability of the final product. Although ChlamydiaTrol Ag reagents do not have assigned values, each lot of material is designed to produce a positive reaction within a target range established by each laboratory for each lot of reagent. ChlamydiaTrol Ag reagents should be analyzed in the manner described for control specimens in accordance with instructions supplied by the manufacturer of the test kit being used.

1.3 Substanial Equivalence

ChlamydiaTrol Ag reagent is substantially equivalent to VIROTROL HIV-1 Ag (BK930033) unassayed virology control manufactured and distributed by Blackhawk

BioSystems, Inc. in that they are both liquid unassayed control products which contain specific antigens at useful concentrations and are intended for use by laboratories to monitor reproducibility and performance of test procedures.

2.0 REAGENT DESCRIPTION AND STORAGE

ChlamydiaTrol Ag is a liquid quality control reagent classified under Multi Analyte Controls(assayed and unassayed).

ChlamydiaTrol Ag reagent is prepared from *Chlamydia trachomatis* elementary bodies extracted from infected mouse L cells grown in culture. Optimally infected cells are harvested and disrupted by sonication, and cellular debris is removed by centrifugation. *Chlamydia trachomatis* elementary bodies used in the preparation of ChlamydiaTrol Ag reagent have been rendered noninfectious by treatment with gamma radiation. The reagent contains human serum albumin(HSA), preservatives and stabilizers. HSA used to produce ChlamydiaTrol Ag reagents is prepared from normal human plasma which has been tested tested using licensed reagents and found to be non-reactive for Hepatitis B surface Antigen, antibodies to Human Immunodeficiency Virus Types 1 and 2 and antibodies to Hepatitis C Virus.

ChlamydiaTrol Ag reagents should be stored at 2°C to 8°C when not in use. When stored as directed, reagents are suitable for use for up to sixty days after opening or until the expiration date stated on the label. The expiration date for each reagent lot is established as twenty-four months from the date of manufacture.

3.0 PERFORMANCE

3.1 Expected Results

ChlamydiaTrol Ag reagents are unassayed controls and do not have assigned values. ChlamydiaTrol Ag reagents should be processed in the manner described for controls with *in vitro* diagnostic kits for the direct detection of *Chlamydia trachomatis* antigens and should be prepared and tested in conjunction with unknown specimens. Results may vary among different laboratories, among manufacturers and among different lots of the same test kit.

Representative levels of reactivity of two different lots of ChlamydiaTrol Ag reagents in commercially marketed *in vitro* diagnostic test kits are presented in Table 1. Results for each method were obtained by testing ChlamydiaTrol Ag reagents within a single location with a single lot of each reagent test kit in multiple test runs(n) performed by two or more operators.

3.2 Reproducibility

The reproducibility of ChlamydiaTrol Ag reagent reactivity was evaluated with respect to within run and between run precision. Within run precision was determined by testing twenty replicates of the same sample in a single test run. Between run precision was determined from single test results of the sample in multiple test runs using the same reagent test kit lot. Results are summarized in Tables 2 and 3 and demonstrate coefficients of variation ranging between 2.1% and 19.9% for within run precision and and for between run precision.

4.0 STRESS TESTING

For the following studies, reactivity of ChlamydiaTrol Ag reagent was evaluated using the Abbott Chlamydiazyme Diagnostic Kit enzyme immunoassay(EIA). Similar studies were conducted for VIROTROL HIV-1 Ag reagent using the Abbott HIVAG-1 EIA and results reported in BK930033 demonstrate substantially equivalent performance of both products after exposure to stress conditions.

4.1 Elevated Temperature Studies

Reactivity of ChlamydiaTrol Ag reagent was evaluated after storage of unopened bottles at various temperatures. Results of testing of two different lots of reagent stored at room temperature(20-25°C) and 37°C are presented in Table 4 and demonstrate performance consistent with that of reagent stored at 2-8°C.

4.2 Freeze/Thaw Studies

Reagents were also tested after freezing at -20°C and thawing at room temperature. Freeze/thaw cycles consisted of storage of the sample at -20°C overnight followed by thawing at room temperature(20-25°C) until the solution reached room temperature. When multiple freeze/thaw cycles were performed, samples were then returned to -20°C to repeat the cycle. Results of these studies are presented in Table 5 and indicate that freezing and thawing of reagents does not affect the reactivity.

4.3 Open Vial Stability

Reactivity of two different lots of ChlamydiaTrol Ag reagent was evaluated at various time intervals after bottles were opened. Results of these studies are presented in Table 6 and demonstrate consistent performance of ChlamydiaTrol Ag reagents for time periods up to ninety days after opening. These data substantiate a claim for use of the reagent for up to sixty days after opening.

5.0 CLINICAL EVALUATION

During the period from June, 1996 through May, 1997, two different lots of ChlamydiaTrol Ag reagent were evaluated by eight clinical investigators using commercially marketed test kits for the detection of *Chlamydia trachomatis* antigen. The purpose of these studies was to establish performance characteristics of ChlamydiaTrol Ag reagents during routine use in clinical laboratory settings and to assure their safety and effectiveness under normal conditions of use.

5.1 Materials and Methods

The following commercial test systems were used in these studies:

CHLAMYDIAZYME Diagnostic Kit EIA(Abbott Laboratories)
LCx *Chlamydia trachomatis* Assay(Abbott Laboratories)
MicroTrak II Chlamydia EIA (Behring Diagnostics, Inc.)

All test procedures were carried out following instructions provided by the test kit manufacturer.

The recommended test procedure was to include ChlamydiaTrol Ag reagent in each test run by dispensing an aliquot into a sample tube and processing in the same manner as controls or calibrators provided with the test kit. Location of the ChlamydiaTrol Ag sample within a test run was determined by the user. Frequency of testing among sites varied depending upon total test specimen volume.

Results reported by each site were analyzed to determine the mean value, standard deviation and coefficient of variation. Analyses were performed on results obtained with ChlamydiaTrol Ag reagents as well as on values reported for controls or calibrators provided by the test kit manufacturer.

5.2 Results

Clinical evaluations at eight different laboratory sites were conducted using two different lots of ChlamydiaTrol Ag reagent and three different test methodologies. Results are presented in Tables 7 through 12 and include a summary of overall results for ChlamydiaTrol Ag as well as for controls or calibrators provided by the manufacturer of the test kit being used. Each result(n) for ChlamydiaTrol Ag represents a single determination whereas results for kit controls and calibrators represent averages of two or three determinations. Included in each table is a summary of overall results for each data set from each site. In addition, data collected were analyzed by separating results obtained with each commercial test kit lot for which three or more data points were reported. Differences in the total number of

data points among laboratories occur as a consequence of variations in the total number of runs a site performed during the test period.

Results of ChlamydiaTrol Ag reagent reactivity in the Abbott Chlamydiazyme EIA procedure were reported by Sites 1 through 3 and are summarized in Tables 7 and 8. Consistent performance of ChlamydiaTrol Ag reagent at multiple sites is demonstrated by comparable mean absorbance values, sample to cutoff ratios(S/CO) and coefficients of variation obtained with multiple test kit lots.

Two different lots of ChlamydiaTrol Ag reagent were evaluated by Site 1. A comparison of overall results in Tables 7 and 8 for site 1 demonstrates equivalent performance of both reagent lots with respect to reactivity and reproducibility.

Performance of ChlamydiaTrol Ag reagent in the Behring MicroTrak II Chlamydia enzyme immunoassay was evaluated at Site 4. Results were collected using a single test kit lot and are summarized in Table 13.

Performance of a single lot of ChlamydiaTrol Ag reagent in the Abbott LCx *Chlamydia trachomatis* Assay procedure was evaluated at Sites 5 through 8. Results from each of the sites are presented in Tables 9 through 12 and demonstrate a high degree of consistency among the four laboratories. Overall mean values for the ChlamydiaTrol Ag S/CO results range from a minimum of 3.67 at Site 8 to a maximum of 4.51 at Site 7. Consistency of reagent performance among multiple test kit lots is also demonstrated with results obtained from data separated and analyzed for each test kit lot. A total of ten different test kit lots was used among the four different laboratories with duplication of three kit lot numbers among the sites. Comparable results for mean rate values, sample to cutoff ratios and coefficients of variation were obtained at all four sites and document perofrmance of the reagent in this test system..

5.3 Discussion

Clinical evaluation of ChlamydiaTrol Ag reagents was carried out in eight different laboratories. During the study, results were collected for two different reagent lots using three different test methods for the detection of *Chlamydia trachomatis* antigen.

A summary of the overall results obtained with each of the different test methods is presented in Table 13. These results demonstrate similar reagent performance in all three laboratories which utilized the Abbott Chlamydiazyme enzyme immunoassay methodology and the same ChlamydiaTrol Ag lot. Consistent reproducibility of results among these laboratories is also evidenced by coefficients of variation ranging from 13.7% to 18.9%. Comparable results were also obtained for a single ChlamydiaTrol Ag reagent lot when tested in the Abbott LCx *Chlamydia trachomatis*

assay, with coefficients of variation ranging from 5.0% to 9.5% among four different laboratories. Data presented here document reagent stability under field conditions and demonstrate consistent reagent performance among laboratories.

6.0 CONCLUSION

Product performance evaluation studies have been conducted by Blackhawk BioSystems, Inc. and by eight clinical investigators to validate performance of ChlamydiaTrol Ag reagent. The results of these studies document the safety and effectiveness of the reagent under normal conditions of use and also demonstrate that ChlamydiaTrol Ag reagent is substantially equivalent to similar currently marketed quality control products in that it has the same medical intended use with similar performance characteristics.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

Carol Polito
President
Blackhawk BioSystems, Inc.
12945 Alcosta Boulevard
San Ramon, California 94583

AUG 12 1997

Re: K972129
Trade Name: ChlamydiaTrol Ag
Regulatory Class: I
Product Code: MJZ, MGM
Dated: June 5, 1997
Received: June 6, 1997

Dear Ms. Polito:

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 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 Good Manufacturing Practice for Medical Devices: General (GMP) regulation (21 CFR Part 820) and that, through periodic GMP 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 at (301) 443-6597 or at its internet address "http://www.fda.gov/cdrh/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 (if known): K972129

Device Name: ChlamydiaTrol Ag

Indications For Use:

The ChlamydiaTrol™ Ag is intended for use as an unassayed control reagent with in vitro diagnostic assay procedures for detection of Chlamydia trachomatis, including both chlamydial antigen (MOMP or LPS) and nucleic acid based methods of detection. ChlamydiaTrol Ag reagents are intended to provide a means of estimating precision and reproducibility, and have the potential for detecting systematic deviations from specific laboratory testing procedures. Use of ChlamydiaTrol Ag reagent will monitor assay functionality and not analytical sensitivity of the assay detection limits.

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K972129

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

(Optional Format 1-2-96)