K040631

MAR 1 8 2004

Summary of 510(k) Safety and Effectiveness Information
Vitalab Direct Bilirubin Reagent

This summary of 510(k) safety and effectiveness information is being submitted in accordance with the requirements of SMDA 1990 and 21 CFR 807.92.

Submitted by:

Clinical Data, Inc.
1075 West Lambert Road, Building D
Brea, California 92861

Contact Person: Wynn Stocking
Regulatory Affairs Manager

Date Submitted: January 20, 2003

Device Names:

Proprietary name: Vitalab Direct Bilirubin Reagent
Common name: Conjugated (direct) bilirubin reagent
Classification Name: Diazo colorimetry, bilirubin

Proprietary name: Vitalab Total Bilirubin Reagent
Common name: Total bilirubin reagent
Classification Name: Diazo colorimetry, bilirubin

Proprietary name: Vitalab Bilirubin Calibrator
Common name: Bilirubin calibrator
Classification Name: Calibrator, multi-analyte mixture

Device Descriptions:

The Vitalab Direct Bilirubin Reagent is a two-part reagent for use with the Vitalab Selectra Analyzer. This reagent determines conjugated bilirubin through a reaction with diazotized 2,4-dichloroanaline to produce a colored chromogen in acidic solution.

The Vitalab Total Bilirubin Reagent is a two-part reagent for use with the Vitalab Selectra Analyzer. This reagent determines total bilirubin through a reaction with diazotized 2,4-dichloroanaline in the presence of detergents to produce a colored chromogen in acidic solution.

The Vitalab Bilirubin Calibrator is a liquid stable bilirubin calibrator prepared from purified components in a human serum albumin matrix. Bilirubin set points are traceable to NIST reference materials,

Intended Uses:

The Vitalab Direct Bilirubin Reagent is intended for use with the Vitalab Selectra Analyzer for the quantitative determination of conjugated (direct) bilirubin in serum and plasma. Direct bilirubin results may be used for the diagnosis and treatment of liver, hemolytic hematological, and metabolic disorders, including hepatitis and gall bladder block.

The Vitalab Total Bilirubin Reagent is intended for use with the Vitalab Selectra Analyzer for the quantitative determination of total bilirubin in serum and plasma. Total bilirubin results may be used for the diagnosis and treatment of liver, hemolytic hematological, and metabolic disorders, including hepatitis and gall bladder block.

The Vitalab Bilirubin Calibrator is intended to calibrate the Vitalab Selectra Analyzer for the quantitative determination of total and direct bilirubin in serum and plasma.

Predicate Devices:

The Vitalab Direct Bilirubin Reagent Kit is substantially equivalent to the Roche Direct Bilirubin Reagent, product no. 0737499, which is currently marketed by Roche Diagnostics Corp. of Indianapolis, IN.

The Vitalab Total Bilirubin Reagent Kit is substantially equivalent to the Beckman Total Bilirubin Reagent, product no. 442745, which is currently marketed by Beckman Coulter, Inc. of Brea, CA.

The Vitalab Bilirubin Calibrator is substantially equivalent to the Beckman Bilirubin Calibrator, product no. 465915, which is currently marketed by Beckman Coulter, Inc. of Brea, CA.

Summary of Performance Data for the Vitalab Direct Bilirubin Reagent:

Usable Range: The Vitalab Direct Bilirubin Reagent is linear to at least 10.0 mg/dL, as shown by the recovery of linearity related, human serum reference pools that span the linear range of the assay. Least squares regression statistics compare recoveries to dilution factors.

(Vitalab Recoveries) = 0.2 mg/dL + 0.834 x (Reference), $r = 0.9995$, $s_{y.x} = 0.12$ mg/dL, $n = 32$

Detection Limit: The detection limit is shown through the repetitive assay of normal saline. The observed mean and standard deviation of a 30 replicate within run precision study are both 0 mg/dL. The detection limit, calculated as the mean recovery plus two standard deviations is 0.0 mg/dL.

Precision: Precision is demonstrated by the replicate assay of control serum. Precision statistics, calculated analogous to the method described in NCCLS Guideline EP3-T, are shown below.

			Within Run		Total	
Sample	n	mean	1SD	%CV	1SD	%CV
Serum 1	66	0.3	0.03	11.3%	0.03	11.4%
Serum 2	66	1.7	0.02	1.3%	0.05	2.8%
Serum 3	66	4.0	0.02	0.5%	0.10	2.6%

Correlation: Forty nine serum and 41 plasma specimens from adult patients were assayed for direct bilirubin using the Vitalab Selectra E Analyzer and another commercially available method. Results were compared by Deming regression and the following statistics were obtained.

Selectra = 0.05 mg/dL + 0.832 x Competitive Reagent
$s_{y.x} = 0.14$ mg/dL $n = 90$ range = 0.1 - 11.6 mg/dL

Stability: The 14 day onboard reagent stability and 7 day calibration stability claims are documented through the assay of serum controls over the claimed periods. In all cases, statistical estimates of total imprecision are less than 0.2 mg/dL.

Summary of Performance Data for the Vitalab Total Bilirubin Reagent:

Usable Range: The Vitalab Total Bilirubin Reagent is linear to at least 25.0 mg/dL, as shown by the recovery of linearity related, human serum reference pools that span the linear range of the assay. Least squares regression statistics compare recoveries to dilution factors.

(Vitalab Recoveries) = 0.2 mg/dL + 0.888 x (Reference), $r = 0.9999$, $s_{y,x} = 0.16$ mg/dL, $n = 36$

Detection Limit: The detection limit is shown through the repetitive assay of normal saline. The observed mean and standard deviation of a 30 replicate within run precision study are both 0 mg/dL. The detection limit, calculated as the mean recovery plus two standard deviations is 0.0 mg/dL.

Precision: Precision is demonstrated by the replicate assay of control serum. Precision statistics, calculated analogous to the method described in NCCLS Guideline EP3-T, are shown below.

			Within Run		Total	
Sample	n	mean	1SD	%CV	1SD	%CV
Serum 1	54	0.4	0.02	5.8%	0.03	6.7%
Serum 2	54	1.4	0.04	3.1%	0.07	4.8%
Serum 3	54	5.8	0.07	1.1%	0.15	2.5%

Correlation: Fifty nine serum and 44 heparinized plasma specimens from adult patients were assayed for total bilirubin using the Vitalab Selectra E Analyzer and another commercially available method. Results were compared by Deming regression and the following statistics were obtained.

Selectra = -0.4 mg/dL + 1.037 x Competitive Reagent
$s_{y,x} = 0.20$ mg/dL n = 103 range = 0.1 - 25.9 mg/dL

Stability: The 7 day onboard reagent stability and 7 day calibration stability claims are documented through the assay of serum controls over the claimed periods. In all cases, statistical estimates of total imprecision are less than 0.2 mg/dL.

Summary of Performance Data for the Vitalab Bilirubin Calibrator:

Accuracy: The accuracy of the assigned set points is documented through method comparison studies. At least 40 serum and plasma specimens from adult patient were assayed for total and direct bilirubin over at least four analytical runs using commercially available methods and Vitalab reagents calibrated with the Vitalab Bilirubin Calibrator.

Deming regression statistics for both total and direct bilirubin are summarized below.

Direct Bilirubin
Selectra = 0.05 mg/dL + 0.832 x Competitive Reagent
$s_{y,x} = 0.14$ mg/dL n = 90 range = 0.1 - 11.6 mg/dL

Total Bilirubin
Selectra = -0.4 mg/dL + 1.037 x Competitive Reagent
$s_{y,x} = 0.20$ mg/dL n = 103 range = 0.1 - 25.9 mg/dL

Open Stability: The open stability claim is confirmed by assaying the total and direct bilirubin levels in vials that have been open for increasing lengths of time. All observed changes in both the total and conjugated bilirubin levels over 3 days at 2°C to 8°C were less than 0.03 mg/dL.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

MAR 1 8 2004

Clinical Data, Inc.
c/o Mr. Ned E. Devine
Entela, Inc
3033 Madison Avenue, SE
Grand Rapids, MI 49548

Re: k040631
Trade/Device Name: Vitalab Direct Bilirubin Reagent
Vitalab Total Bilirubin Reagent
Vitalab Bilirubin Calibator
Regulation Number: 21 CFR 862.1110
Regulation Name: Bilirubin (total or direct) test system
Regulatory Class: Class II
Product Code: CIG; JIT
Dated: March 10, 2004
Received: March 10, 2004

Dear Mr. Devine:

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 (301) 594-3084. 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/dsma/dsmamain.html.

Sincerely yours,

Jean M. Cooper MS, DVM.

Jean M. Cooper, MS, D.V.M.
Director
Division of Chemistry and Toxicology
Office of *In Vitro* Diagnostic Device
Evaluation and Safety
Center for Devices and
Radiological Health

Enclosure

510(k) Number (if known): K040631

Device Name: Vitalab Direct Bilirubin Reagent

Indications for Use:

The Vitalab Direct Bilirubin Reagent is intended for use with the Vitalab Selectra Analyzer as a system for the quantitative determination of conjugated (direct) bilirubin in serum and plasma. Direct bilirubin results may be used for the diagnosis and treatment of liver, hemolytic hematological, and metabolic disorders, including hepatitis and gall bladder block.

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use ✓
(Per 21 CFR 801.109)

OR

Over-The-Counter Use ____

(Optional Format 1-2-96)

Carol C. Benson
Division Sign-Off

Office of In Vitro Diagnostic Device Evaluation and Safety

Page 1 of 1

510(k) Number (if known): K040631

Device Name: Vitalab Total Bilirubin Reagent

Indications for Use:

The Vitalab Total Bilirubin Reagent is intended for use with the Vitalab Selectra Analyzer as a system for the quantitative determination of total bilirubin in serum and plasma. Total bilirubin results may be used for the diagnosis and treatment of liver, hemolytic hematological, and metabolic disorders, including hepatitis and gall bladder block.

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use ✓
(Per 21 CFR 801.109)

OR

Over-The-Counter Use ____

(Optional Format 1-2-96)

Division Sign-Off

Office of In Vitro Diagnostic Device Evaluation and Safety

510(k) K040631

Page 2 of 3

510(k) Number (if known): K040631

Device Name: Vitalab Bilirubin Calibrator

Indications for Use:

The Vitalab Bilirubin Calibrator is intended for use with the Vitalab Selectra Analyzer to establish points of reference that are used in the determination of total and direct bilirubin in human specimens.

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use ✓
(Per 21 CFR 801.109)

OR

Over-The-Counter Use ____

(Optional Format 1-2-96)

Carol C Benson

Division Sign-Off

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510(k) K040631

Page 3 of 3