

510k Summary of Safety and Effectiveness

SEP , 3 1999

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.

The assigned 510(k) number is:

Applicant Information:

Date Prepared:

Name: Columbia Bioscience, Inc.
Address: 8775 M Centre Park Drive, #559
Columbia, MD 21045

Contact Person: Norman Jenkins
PhoneNumber: 410-995-1278
Fax Number: 410-995-0508

Device Information:

Trade Name:  *H. pylori* IgG ELISA Kit
Common Name: *H. pylori* IgG EIA Test
Classification Name: *H. pylori* IgG Serological Reagent

Equivalent Device:

Wampole *H. pylori* IgG ELISA

Device Description: The  *H. pylori* IgG ELISA Kit is an enzyme-linked immunosorbent assay (ELISA) for the detection of IgG antibodies to *H. pylori* antigen in human serum.

Intended Use: For the qualitative determination of IgG antibodies to *Helicobacter pylori* antigen in human sera by indirect enzyme immunoassay. The *H. pylori* IgG assay may be used as an aid in the diagnosis of *H. pylori* infection in adult patients with gastrointestinal symptoms. The test can be performed either manually or in conjunction with the MAGO® PLUS Automated EIA Processor.

Principle of Procedure:

Purified *H. pylori* antigen is bound to microwells. Diluted patient sera, Cut-Off Calibrator and controls are placed in the microwells and incubated. Anti-*H. pylori* IgG antibodies, if present, will bind to the antigen forming antigen-antibody complexes. Residual sample is eliminated by aspirating and washing. Conjugate (horseradish peroxidase-labeled anti-human IgG) is added and will bind to these complexes. Unbound conjugate is removed by aspiration and washing. Substrate is then added and incubated. In the presence of bound enzyme the substrate is converted to an end product. The absorbance of this end product can be read spectrophotometrically at 450 nm (reference 600-630 nm) and is directly proportional to the concentration of IgG antibodies to *H. pylori* present in the sample.

Performance Characteristics

A. Sensitivity and Specificity Using Characterized Sera

Frozen retrospective sera from two hundred forty-nine patients were characterized using biopsy with culture, stain and CLO results for *H. pylori*. Based on the results of this testing, the patient sera were characterized as follows :

- * 121 sera were characterized as positive. These were positive for *H. pylori* by biopsy.
- * 128 sera were characterized as negative. These were negative for *H. pylori* by biopsy.

The sera were tested on the *Is-H. pylori* IgG Test Kit at a clinical commercial laboratory. The data is summarized in Table 2.

TABLE 2

Is-H. pylori IgG

		POSITIVE	*EQUIVOCAL	NEGATIVE
<i>H. pylori</i> Clinical Status (Biopsy)	POSITIVE	112	3	6
	NEGATIVE	12	3	113

			95% CI
Sensitivity	=	112/118 = 94.9%	89.3-98.1%
Specificity	=	113/125 = 90.4%	83.8-94.9%
Overall Agreement	=	225/243 = 92.6%	88.5-95.6%

*Equivocal results were excluded from the above calculations.

B. Relative Agreement Versus Another ELISA

Frozen retrospective sera from two hundred forty-nine patients (same samples from Table 2) were tested at a clinical commercial laboratory using the *Is-H. pylori* IgG Test Kit and another commercially available kit for *H. pylori* IgG antibodies. The data in Table 3 illustrates the relative agreement of the *Is-H. pylori* IgG Test Kit versus another commercial ELISA.

TABLE 3
Is-H. pylori IgG

	POSITIVE	*EQUIVOCAL	NEGATIVE	
Another ELISA	POSITIVE	122	3	0
*EQUIVOCAL	1	1	3	
NEGATIVE	1	2	116	

- Of the 125 sera positive on the alternate ELISA tested, 122 were positive for *Is-H. pylori* IgG, none were negative, and 3 were equivocal
- Of the 119 sera negative on the alternate ELISA tested, 1 was positive for *Is-H. pylori* IgG, 116 were negative, and 2 were equivocal
- Of the 5 sera equivocal on the alternate ELISA tested, 1 was positive for *Is-H. pylori* IgG, 1 was negative, and 3 were equivocal
- Overall Relative Agreement = $238/239 = 99.6\%$

* Equivocal results were excluded from calculations

NOTE: Please be advised that 'relative' refers to the comparison of the assay's results to that of a similar assay. There was not an attempt to correlate the assay's results with disease presence or absence. No judgment can be made on the comparison's accuracy to predict disease.

C. Precision

To determine the precision of the *Is-H. pylori* IgG Test Kit, four positive and two negative sera were assayed ten times each in three different runs at three different sites. The three sites included: the manufacturer, a research & development laboratory, and a clinical commercial laboratory. The intra- and interassay precision obtained at each site is shown in Tables 4,5, and 6.

TABLE 4 : Site #1 - Intra-Assay and Interassay Precision

SERUM	INTRA-ASSAY RUN 1		INTRA-ASSAY RUN 2		INTRA-ASSAY RUN 3		INTERASSAY	
	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%
A (POS)	1.51	3.85	1.47	5.05	1.45	4.97	1.47	4.80
B (POS)	2.60	2.16	2.58	4.20	2.59	3.69	2.59	3.35
C (POS)	2.23	3.66	2.23	3.65	2.20	2.98	2.22	3.39
D (POS)	1.73	3.82	1.72	2.19	1.70	3.57	1.71	3.24
E (NEG)	0.19	10.81	0.16	13.54	0.14	36.64	0.17	23.60
F (NEG)	0.36	37.22	0.32	16.08	0.34	11.54	0.34	24.91

TABLE 5 : Site #2- Intra-Assay and Interassay Precision

SERUM	INTRA-ASSAY RUN 1		INTRA-ASSAY RUN 2		INTRA-ASSAY RUN 3		INTERASSAY	
	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%
A (POS)	1.34	4.92	1.32	5.00	1.38	4.39	1.35	4.93
B (POS)	2.25	5.85	2.27	5.17	2.45	6.18	2.33	6.78
C (POS)	1.97	3.40	1.96	4.24	2.11	4.83	2.01	5.41
D (POS)	1.46	6.27	1.45	4.52	1.62	4.02	1.51	6.93
E (NEG)	0.18	12.48	0.17	11.70	0.22	10.28	0.19	15.39
F (NEG)	0.40	11.01	0.35	20.01	0.47	12.50	0.41	18.56

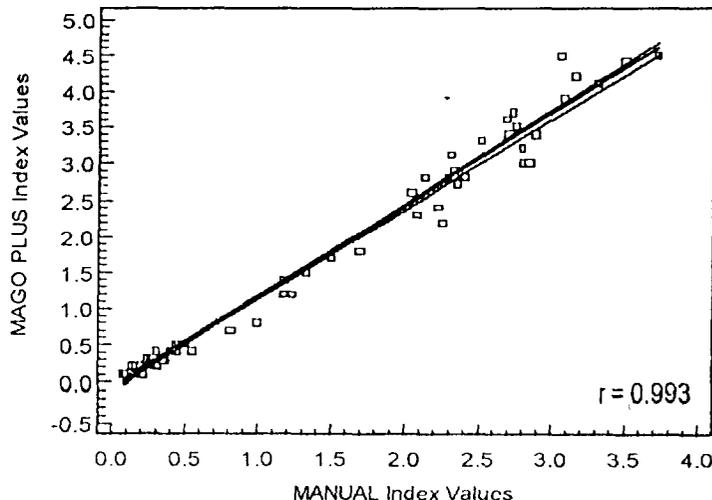
TABLE 6 : Site #3 - Intra-assay and Interassay Precision

SERUM	INTRA-ASSAY RUN 1		INTRA-ASSAY RUN 2		INTRA-ASSAY RUN 3		INTERASSAY	
	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%
A (POS)	1.41	7.59	1.30	5.70	1.27	4.60	1.33	7.64
B (POS)	2.54	4.41	2.30	3.74	2.19	2.52	2.34	7.31
C (POS)	2.13	5.91	1.96	4.89	1.90	3.43	2.00	6.94
D (POS)	1.56	6.16	1.50	4.59	1.45	2.08	1.50	5.42
E (NEG)	0.16	19.99	0.18	6.38	0.16	6.25	0.17	13.77
F (NEG)	0.34	10.92	0.34	13.65	0.27	15.74	0.32	16.60

D. Correlation of Manual and MAGO Plus Results

The *Is-H. pylori* IgG Test Kit has been developed for automated as well as manual use. To demonstrate the equivalence of the manual and MAGO Plus procedures, the results of 100 serum samples tested by both methods were plotted. A scattergram and regression line of the results obtained with 95% confidence intervals is shown in Figure 3. The data indicate good correlation with a Pearson Correlation Coefficient of 0.993.

FIGURE 3 : Manual and MAGO Plus Result Correlation



E. MAGO Plus Precision

The precision of the assay when performed on the MAGO Plus Automated EIA Processor was determined by assaying six sera ten times each in three different runs. Table 7 shows the intra-and interassay precision obtained using the MAGO Plus.

TABLE 7 : Site #2- Intra-Assay and Interassay Precision - MAGO Plus

SERUM	INTRA-ASSAY RUN 1		INTRA-ASSAY RUN 2		INTRA-ASSAY RUN 3		INTERASSAY	
	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%	MEAN INDEX	CV%
A (POS)	1.19	8.36	1.02	15.19	1.25	5.66	1.15	12.83
B (POS)	2.12	4.87	2.20	9.34	2.27	2.97	2.20	6.71
C (POS)	1.97	4.18	1.89	5.82	1.90	4.96	1.92	5.19
D (POS)	1.37	6.01	1.45	4.88	1.54	7.62	1.45	7.82
E (NEG)	0.13	37.16	0.12	35.14	0.20	62.36	0.15	57.40
F (NEG)	0.32	24.65	0.34	24.80	0.34	15.19	0.33	21.33



DEPARTMENT OF HEALTH & HUMAN SERVICES

SEP 3 1999

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

Mr. William Boteler
Immunoprobe, Inc.
1306F Bailes Lane
Frederick, Maryland 21701

Re: K990462
Trade Name: *Helicobacter pylori* IgG ELISA
Regulatory Class: I
Product Code: LYR
Dated: June 15, 1999
Received: June 16, 1999

Dear Mr. Boteler:

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.

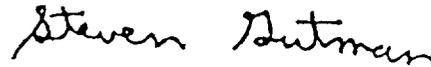
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Under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88), this device may require a CLIA complexity categorization. To determine if it does, you should contact the Centers for Disease Control and Prevention (CDC) at (770)488-7655.

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:

Device Name: H. pylori IgG ELISA

Indications For Use: For the qualitative determination of IgG antibodies to *Helicobacter pylori* antigen in human sera by indirect enzyme immunoassay. The *H.pylori* IgG assay may be used as an aid in the diagnosis of *H. pylori* infection in adult patients with gastrointestinal symptoms. The test can be performed either manually or in conjunction with the MAGO® PLUS Automated EIA Processor.

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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)
Division of Clinical Laboratory Devices

510(k) Number K990462