K041238

DEC 1 3 2004

510(k) Summary

*Please note that this 510(k) Summary follows the guidelines set forth in Title 21 (Food and Drugs), Chapter I (Food and Drug Administration Department of Health and Human Services), Subchapter H (Medical Devices), Part 807 (Establishment Registration and device Listing for Manufacturers and Initial Importers of Devices), Subpart E (Premarket Notification Procedures, Sec. 807.92 (Content and format of a 510(k) Summary).

(1) **Submitter's Name:** Biohit Plc.
Address: Laippatie 1, Fin-00880 Helsinki, Finland
Phone Number: 800-922-0784
Contact Person: Robert P. Gearty, Director, U.S. Operations
Date: April 29, 2004

(2) **Product and Trade Name**
Helicobacter pylori IgG ELISA

Common Name or Classification Name
An ELISA kit for the qualitative detection of IgG class antibodies to *Helicobacter pylori* in human serum and EDTA or Heparin plasma.
Product Code: LYR

(3) **Legally marketed device to which the submitter claims equivalence**

IMMULITE® *Helicobacter pylori* IgG, a two-step immunometric assay for the qualitative detection of IgG antibodies to *Helicobacter pylori* (Diagnostic Products Corporation (DPC – Los Angeles, CA) (K000463)

(4) **Description of the device**

The *Helicobacter pylori* IgG ELISA is an immunoassay to detect IgG antibodies to *Helicobacter pylori.* The assay requires a total of 90-minutes incubation. The test uses partially purified *Helicobacter pylori* bacterial antigen adsorbed to a solid phase microassay well. Prediluted test serum or plasma is added to each well and incubated for 30 minutes at 37°C. If *Helicobacter pylori*-specific IgG antibodies are present, they will bind to the antigen in the well. After the incubation, the wells are washed three times to remove any unbound serum or plasma. An HRP-conjugated monoclonal anti-human IgG is added to each well, and the test is incubated for 30 minutes at 37°C. If *Helicobacter pylori* antibody is present, it will bind to the antibody attached to the antigen on the well. The wells are washed again to remove any unbound conjugate. A TMB-substrate is added to each well and incubated for 30 minutes at room temperature (20–25°C). If enzyme is present, it will react with the substrate to generate a colored product. After the incubation period, the reaction is stopped with a Stop Solution and the color intensity is measured spectrophotometrically. The *Helicobacter pylori* IgG

ELISA is highly sensitive for the detection of IgG antibodies to *Helicobacter pylori* in serum or plasma samples.

(5) Intended Use of the device

The *Helicobacter pylori* IgG ELISA test is an enzyme-linked immunosorbent assay (ELISA) for the qualitative detection of human IgG class antibodies to *Helicobacter pylori* in serum and in EDTA or heparin-treated plasma. The test is intended to aid in the diagnosis of *Helicobacter pylori* infection in adult patients with clinical symptoms of gastritis. FOR *IN VITRO* DIAGNOSTIC USE.

(6a and 6b1) Summary of the technological characteristics of the device in comparison to those of the predicate device:

Commercial enzyme-linked immunosorbent assays (ELISAs) detecting anti-*Helicobacter pylori* serum IgG are available. These are the tests of choice due to ease of use, sensitivity, specificity and cost effectiveness. ELISAs also offer versatility with regard to the type of immunoglobulin detected (IgG vs IgA). Serum IgG assays are generally more sensitive and specific than serum IgA assays due to more consistent elevation of serum IgG levels (1). The IMMULITE® *Helicobacter pylori* IgG from Diagnostic Products Corporation was used as a predicate device in our evaluation of the Biohit device. A comparison of the predicate devices is presented in the following table:

Name	**510(k) Numbers**	**Sample**	**Format**	**Materials**	**Advantages/ Disadvantages**
Helicobacter pylori IgG ELISA	Subject to this 510(k)	Serum and/or Plasma	ELISA	Antigen against *Helicobacter pylori*	Advantages – 90 minute assay, easy to use, cost effective, batch method, sensitive and specific Disadvantages – may not distinguish active from past infection
IMMULITE® *Helicobacter pylori* IgG	K000463	Serum	Chemiluminescent EIA	Antigen against *Helicobacter pylori*	Advantages – 65 minute assay Disadvantages – requires a luminometer; may not distinguish active from past infection

(6b2) Safety and Effectiveness

Culture of the organism and/or histologic staining from a biopsy sample obtained at endoscopy is considered by the FDA to be the current "Gold Standard" for detection of *Helicobacter pylori*. Culture media for isolation of *Helicobacter pylori* from biopsy specimens and various histological stains are available from different sources. Biopsy/bacterial culture was used in clinical laboratories before 1976. Thus no 510(k) number is applicable.

Detecting the organism – Culture and/or Histological Staining from a gastric biopsy is considered by the FDA to be the "Gold Standard" for the detection of *Helicobacter pylori*. An invasive endoscopic procedure is required to obtain biopsy samples for the direct detection of *Helicobacter pylori*. Biopsy is expensive and subject to sampling errors. This invasive procedure also presents some risk to the patient. In comparison studies to the enzyme-linked immunosorbent (ELISA) assays from serum, there have been differences in results, due first of all to sampling errors. Additionally, if the *H. pylori* has been successfully eradicated from the stomach mucosa, the biopsy *H. pylori* result has been negative, but serological tests such as ELISA still exhibit the *H. pylori* antibodies titer positive for quite some time diminishing in 4-6 months into half of its original value.

Culture of a gastric biopsy sample requires the use of non-selective culture media supplemented with blood or serum and microaerophilic conditions. The culture isolates are then identified as *Helicobacter pylori* by morphology, cytochrome oxidase, catalase, and urease activities (1).

Histological Staining of a biopsy sample may be performed using a variety of stains that demonstrate the presence of *Helicobacter pylori* in histological specimens. These stains include, but are not limited to, Geimsa, Warthin-Starry silver stain, Acridine orange stain and hematoxylin-and-eosin stain (1).

Bacterial Culture of biopsy sample	Used before 1976, 510(k) not applicable.	Gastric biopsy sample	Biopsy and culture	Non-selective media supplemented with serum or blood	Advantages – direct detection of the organism Disadvantages – Invasive and biopsy sampling is expensive and places patients at some risk, subject to sampling errors.
Histological Staining of biopsy sample	Used before 1976, 510(k) not applicable.	Gastric biopsy sample	Biopsy and stain	Various stains	Advantages – direct detection of the organism. Disadvantages – Invasive and biopsy sampling is expensive and places patients at some risk, subject to sampling errors.

The *Helicobacter pylori* IgG ELISA test was compared to clinical diagnosis by biopsy. The *Helicobacter pylori* IgG ELISA test was also compared to a commercially available enzyme immunoassay for *Helicobacter pylori* IgG. The results of our clinical evaluations show that the *Helicobacter pylori* IgG ELISA test exhibited a 77.6% agreement with biopsy and a 97.0% agreement with the commercial test. These results demonstrate that the test is useful for the detection of *Helicobacter pylori* IgG antibody in human serum and plasma samples.

(6b3) Conclusions demonstrating that the Biohit *Helicobacter pylori* IgG ELISA is as safe, as effective, and performs as well as or better than the legally marketed devices identified in (3):

The purpose of this study was to evaluate the *Helicobacter pylori* IgG ELISA developed by Biohit, Plc. Our evaluation demonstrates the following:

- The *Helicobacter pylori* IgG ELISA exhibits a sensitivity and specificity of 80.9% and 75.8%, respectively, when compared with histology, which is considered the "gold standard". The test demonstrates predictive positive and negative values of 64.6% and 87.9%, respectively, with an agreement of 77.6% when compared with histology. When compared with another commercial ELISA for *H. pylori* IgG, the test exhibited a sensitivity and specificity of 88.6% and 100%, respectively. The predictive positive and negative values were 100% and 96.2%, respectively, with an agreement of 97.0%.

- The *Helicobacter pylori* IgG ELISA is specific for *Helicobacter pylori*. The test does not react with antigens from intestinal bacteria or with serum components including hemoglobin, bilirubin, and lipid.

- The *Helicobacter pylori* IgG ELISA can be performed in 90 minutes, providing the clinical laboratory with rapid and reliable results.

- The *Helicobacter pylori* IgG ELISA is an ELISA that can be used for batch processing large numbers of serum samples.

In summary, the *Helicobacter pylori* IgG ELISA represents a new ELISA test that detects *Helicobacter pylori* IgG in serum and plasma specimens. The test can be used an *in vitro* diagnostic aid for persons suspected of having *H. pylori* infections.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

DEC 1 3 2004

Mr. Robert P. Gearty
Managing Director
Biohit Inc.
3535 Route 66, Bldg #4
P.O. Box 308
Neptune, NJ 07754-0308

Re: k041238
Trade/Device Name: *Helicobacter pylori* IgG ELISA Test
Regulation Number: 21 CFR 866.3110
Regulation Name: Campylobacter Fetus Serological Reagents
Regulatory Class: Class I
Product Code: LYR
Dated: November 23, 2004
Received: November 26, 2004

Dear Mr. Gearty:

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.

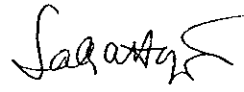
If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish 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,



Sally A. Hojvat, M.Sc., Ph.D.
Director
Division of Microbiology Devices
Office of In Vitro Diagnostic Device
Evaluation and Safety
Center for Devices and
Radiological Health

Enclosure

Indications for Use

510(k) Number (if known): K041238

Device Name: Helicobacter Pylori IgG ELISA test kit.

Indications For Use:

The Helicobacter pylori IgG ELISA test is an enzyme-linked immunosorbent assay (ELISA) for the qualitative detection of human IgG class antibodies to Helicobacter pylori in serum and in EDTA or heparin-treated plasma. The test is intended to aid in the diagnosis of Helicobacter pylori infection in adult patients with clinical symptoms of gastritis.
FOR INVITRO DIAGNOSTIC USE.

Prescription Use ✓ AND/OR Over-The-Counter Use _____
(Part 21 CFR 801 Subpart D) (21 CFR 807 Subpart C)

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

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

Office of In Vitro Diagnostic Device
Evaluation and Safety

510(k) K041238