AUG 30 1999

K992243

510(k) Summary

1. ***Submitter's Name/Contact Person***

Joseph M. Califano
Director, Regulatory Affairs

Address

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Date Prepared

14 June 1999

Date Revised

25 August 1999

2. ***Device Name***

Trade Name:	VIRGO ® β_2 Glycoprotein I IgM Antibody Kit
Common Name:	β_2 Glycoprotein I Antibodies Test System
Classification Name:	Multiple Autoantibodies Immunological Test System

3. ***Predicate***

Trade Name:	Hemagen ® Cardiolipin Antibody Kit
510 (k) Docket No.	K 932373, SE Date; 16 July 1993

The performance of the VIRGO ® β_2 Glycoprotein I IgG, M Antibody Kit was also evaluated with a panel of characterized serum specimens from individuals diagnosed with Primary APS and other diseases.

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3. *Description of Device*

An enzyme-linked immunosorbent assay (ELISA) designed for the detection and measurement of IgM antibodies to β_2 Glycoprotein I in human serum.

The ELISA methodology is commonly used for serum antibody evaluations. Purified human β_2 glycoprotein has been attached to the inner surfaces of the microwell plate. During the initial incubation step, specific antibodies in patient serum will bind to the antigen and are immobilized on the surface. After incubation and a wash step, a peroxidase labeled anti human IgM (μ chain specific) second antibody is added to the wells to react with the immobilized anti beta 2 GP1 antibodies. After incubation and another wash step, the substrate is added. In the wells where the specific antigen-antibody-HRP complex remains bound, the peroxidase enzyme catalyzes a color change in the substrate. After the enzymatic reaction is stopped, the colored product is read in an EIA plate reader at a specified wavelength.

4. Intended Use of Device

This enzyme-linked immunosorbent assay (ELISA) is intended for the detection and measurement of IgM antibodies to β_2 Glycoprotein I in human serum.

5. Technological Characteristics

Proposed Device
The VIRGO ® β_2 Glycoprotein I IgM Antibody Kit is an enzyme-linked immunosorbent assay. The device utilizes optical density as a measure of antibody presence, with an established cutoff between a positive and a negative reaction. The device also contains a IgM Calibrator to enable the assignment of arbitrary IgM antibody values to patient samples.

Predicate Device
The Hemagen ® Cardiolipin IgG/IgM Antibody Kit is an enzyme-linked immunosorbent assay. The device utilizes optical density as a measure of antibody presence, with an established cutoff between a positive and a negative reaction. The device also contains both an IgM Calibrator, and an IgG Calibrator to enable the assignment of MPL or GPL unit values to patient samples. The calibrators have been standardized to the IgM and IgG standards obtained from Louisville APL Diagnostics, Inc.

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5. Performance Data

Precision

To estimate the overall precision of the **VIRGO ® β_2 Glycoprotein I IgM Antibody Kit,** inter, and intra assay studies were conducted. The results of these studies is summarized in the tables below

Inter Assay

Three serum samples, the Negative, and Positive Controls, and the Calibrator were assayed five times each, twice a day, on five different days :

	Mean RMU	Std. Deviation	% C.V.[1]
Sample 1	131.5	16.2	12.3
Sample 2	57.7	8.0	13.9
Sample 3	11.4	1.2	10.7
Neg. Control	< 10	N/A	N/A
Pos. Control	71.0	8.1	11.4
Cal Dil 1	154.4	4.3	2.8
Cal Dil 2	80.3	3.4	4.2
Cal Dil 3	40.2	2.4	5.9
Cal Dil 4	20.0	0.8	3.9
Cal Dil 5	10.4	0.2	2.3

Intra Assay

The same three serum samples were assayed ten consecutive times in duplicate:

	Mean RMU	Std. Deviation	% C.V.[1]
Sample 1	106.7	11.5	10.7
Sample 2	52.8	4.3	8.2
Sample 3	<10	N/A	N/A

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Performance Testing

To demonstrate the effectiveness of the device, a number of clinically characterized serum samples were tested. The results are summarized in the table below:

Patient Group	Number	Number Positive (%)
APS[1]	43	27(62.8)
SLE + APS	7	4 (57.1)
Rheumatoid Arthritis	40	0 (0)
SLE (No APS)	20	1 (5.0)
Scl-70 (No APS)	20	0 (0)
Infectious[2]	40	1 (2.5)
Normals	120	0 (0)

Notes
1. APS = Antiphospholipid syndrome
2. The infectious group consisted of samples with positive syphilis serology.

Comparison with aCL IgM

The 50 clinically characterized APS serum samples, and 40 serum samples from apparently healthy donors were evaluated with the VIRGO ® β_2 Glycoprotein I IgM Antibody Kit, and a commercially available anti-cardiolipin IgM EIA. The results are summarized in the table below

		aCL IgM	
		Positive	Negative
IgM β_2 GPI	Positive	29	2
	Negative	4	55
	TOTAL	33	57

Relative Sensitivity: 87.9 %: {79.6 to 93.1 %; $_{0.95}$ Confidence Interval}
Relative Specificity: 96.5 %: {90.4 to 98.8 %; $_{0.95}$ Confidence Interval}
Relative Agreement: 93.3 %: {86.2 to 96.9 %; $_{0.95}$ Confidence Interval}

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Conclusion

The results of the both the comparative studies with the predicate device and the performance studies utilizing clinically characterized serum specimens support the claim that the proposed device is capable of effectively detecting IgM antibodies to β_2 Glycoprotein I in human serum.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

AUG 30 1999

Mr. Joseph M. Califano
Director, Regulatory Affairs
Hemagen Diagnostics, Inc.
34-40 Bear Hill Road
Waltham, Massachusetts 02154

Re: K992243
Trade Name: VIRGO® β_2 Glycoprotein I IgM Antibody Kit
Regulatory Class: II
Product Code: MSV
Dated: June 14, 1999
Received: July 1, 1999

Dear Mr. Califano:

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.

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 (301) 443-6597, or at its internet address "http://www.fda.gov/cdrh/dsma/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

K992243

Device Name: VIRGO ® β_2 Glycoprotein I IgM Antibody Kit

Indication(s) For Use

This enzyme-linked immunosorbent assay (ELISA) is indicated for the detection and measurement of circulating IgM antibodies to β_2 Glycoprotein in human serum. The presence of these antibodies, in combination with clinical observations and other serological tests, can aid in the diagnosis of Primary and Secondary Antiphospholipid Syndrome.

(PLEASE DO NOT WRITE BELOW THIS LINE)

Concurrence of CDRH, Office of Device Evaluation (ODE)

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K992243

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