

K971909

JUN 20 1997

**510(k) Summary**

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

Joseph M. Califano, Regulatory Affairs Manager

**Address**

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**Date Prepared**

19 May 1997

**2. Device Names**

Trade Name: VIRGO ® AMA ELISA KIT  
Common Name: Antimitochondrial antibody Kit (EIA method)  
Classification Name: Antimitochondrial antibody immunological test system

**3. Predicate Device**

Scimedx Mitochondrial Antibody Test System.

### **3. Description of Device**

An enzyme-linked immunosorbent assay (ELISA) designed for the detection and measurement of antibodies to mitochondrial antigen in human serum.

The ELISA methodology is commonly used for serum antibody evaluations. Purified mitochondrial antigen has been attached to the inner surfaces of the microwell plate. During the initial incubation step, antibodies in patient serum bind specifically to the immobilized antigen and remain in place after a wash step.

A second antibody which is conjugated to horseradish peroxidase (HRP) is used to recognize the "heavy + light" chain regions of the patient's antibodies remaining after the wash step. In the wells where the second antibody remains bound, the conjugated HRP catalyzes a color change in the substrate, tetramethyl benzidine (TMB). After the reaction is stopped, the color is read in an EIA Plate reader.

### **4. Intended Use of Device**

An enzyme-linked immunosorbent assay (ELISA) designed for the detection and measurement of antibodies to mitochondrial antigen in human serum.

### **5.(A) Technological Characteristics**

#### ***Proposed Device***

The **VIRGO ® AMA ELISA 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.

#### ***Predicate Device***

The **Scimedx Mitochondrial Antibody Test System** is an indirect fluorescent antibody assay. The device utilizes the indirect method of fluorescent antibody staining. The resultant level of observed fluorescence is used to determine the presence or absence of antibodies.

### 5.(B) Performance Data

#### Precision

To evaluate precision, both inter-assay and intra-assay studies were conducted. The results are summarized below:

#### A Inter-assay

Twelve different samples {9 positive and 3 negative} were assayed in triplicate twice a day for five different days.

<u>Sample</u>	<u>Mean OD</u>	<u>Std. Dev.</u>	<u>% CV</u>	<u>Mean Units</u>	<u>Std. Dev.</u>	<u>% CV</u>
1	1.721	0.102	5.9	8.5	0.8	9.9
2	1.714	0.111	6.5	8.4	0.9	10.6
3	1.574	0.093	5.9	7.8	0.9	11.4
4	1.116	0.092	8.2	5.5	0.6	11.4
5	0.939	0.083	8.8	4.6	0.7	15.9
6	0.858	0.081	9.5	4.2	0.6	13.6
7	0.729	0.045	6.2	3.6	0.4	12.2
8	0.679	0.033	4.9	3.3	0.3	10.1
9	0.673	0.074	11.0	3.3	0.3	10.1
10	0.020	0.019	N/A	0.1	0.1	N/A
11	0.025	0.025	N/A	0.1	0.1	N/A
12	0.027	0.015	N/A	0.1	0.1	N/A

The assay controls {Positive, Negative, & Cutoff Serum} were assayed concurrently in triplicate twice each day for each of the five days.

<u>Sample</u>	<u>Mean OD</u>	<u>Std. Dev.</u>	<u>% CV</u>
Negative Control	0.003	0.003	N/A
Positive Control	1.202	0.110	9.2
Cutoff Serum	0.205	0.024	11.6

## Precision

### B. Intra-assay

The same twelve samples {9 positive and 3 negative} were assayed 20 times in a single run.

<u>Sample</u>	<u>Mean OD</u>	<u>Std. Dev.</u>	<u>% CV</u>	<u>Mean Units</u>	<u>Std. Dev.</u>	<u>% CV</u>
1	1.362	0.050	3.7	9.3	1.0	10.7
2	1.243	0.034	2.7	8.4	0.8	9.6
3	1.354	0.066	4.9	9.2	0.8	9.1
4	0.822	0.058	7.0	5.6	0.5	9.2
5	0.608	0.043	7.2	4.1	0.4	10.2
6	0.636	0.054	8.5	4.3	0.6	13.7
7	0.600	0.039	6.5	4.1	0.4	11.0
8	0.559	0.030	5.4	3.8	0.4	9.6
9	0.532	0.033	6.1	3.6	0.4	9.7
10	0.010	0.002	N/A	0.07	0.01	N/A
11	0.009	0.002	N/A	0.06	0.01	N/A
12	0.010	0.001	N/A	0.07	0.01	N/A

The assay controls {Positive and Cutoff Serum} were assayed concurrently 20 times.

<u>Sample</u>	<u>Mean OD</u>	<u>Std. Dev.</u>	<u>% CV</u>
Positive Control	1.047	0.040	3.8
Cutoff Serum	0.149	0.015	10.2

## Comparison Testing

A total of 154 serum specimens (68 from individuals with known or suspected liver disease, and 86 from normal apparently healthy donors) were concurrently assayed by both the predicate device and the proposed device. The results are presented in the tables that follow:

**Table 1 Combined known or suspected liver disease specimens, n = 68**

	<u>Predicate Device</u>		<u>Total</u>
	<u>Positive</u>	<u>Negative</u>	
<u>Proposed Device</u>			
Positive	61	0	61
Negative	0	7	7
<u>Total</u>	<u>61</u>	<u>7</u>	<u>68</u>

Relative Sensitivity = 100.0 % {61/61}, <sub>0.95</sub> confidence interval = 94.1% to 100 %

**Table 2 Normals, n = 86**

	<u>Predicate Device</u>		<u>Total</u>
	<u>Positive</u>	<u>Negative</u>	
<u>Proposed Device</u>			
Positive	0	0	0
Negative	0	86	86
<u>Total</u>	<u>0</u>	<u>86</u>	<u>86</u>

Relative Specificity = 100 % {86/86}, <sub>0.95</sub> confidence interval = 95.7% to 100 %

### **Interfering Substances**

Lipemic, icteric, and hemolytic samples were evaluated with the assay following **NCCLS Document EP7-P Proposed Guideline, Interference Testing in Clinical Chemistry**. The results indicate that there is no significant effect (<15 % variation) on the assay for samples with:

Hemoglobin concentration:	≤ 500 mg/dL
Bilirubin concentration:	≤ 20 mg/dL
Lipid concentration:	≤ 3000 mg/dL

### **Prozone**

The **VIRGO® AMA ELISA Kit** was used to assay several high titered serum samples to determine if the kit would return unexpectedly low values. The results of this evaluation indicate that the kit gives appropriately high positive results with high titered sera.

### **Conclusions**

The results of the comparative studies support the claim that the proposed device is substantially equivalent to the predicate device and performs as an effective screening assay.



Food and Drug Administration  
2098 Gaither Road  
Rockville MD 20850

JUN 20 1997

- Joseph M. Califano  
Manager, Regulatory Affairs  
HEMAGEN DIAGNOSTICS, INC.  
34-40 Bear Hill Road  
Waltham, MA 02154

Re: K971909  
Name: VIRGO® AMA ELISA KIT  
Regulatory Class: II  
Product Code: 82 DBM  
Dated: May 19, 1997  
Received: May 23, 1997

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 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 requirement, 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,



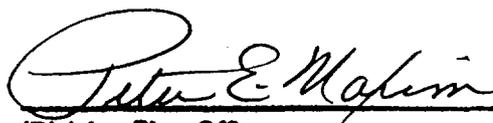
Steven I. Gutman, M.D., M.B.A.  
Director  
Division of Clinical  
Laboratory Devices  
Office of Device Evaluation  
Center for Devices and  
Radiological Health

Enclosure

Device Name: VIRGO ® AMA ELISA KIT

Indication(s) For Use

This enzyme-linked immunosorbent assay (ELISA) is indicated for the detection and measurement of antimitochondrial antibodies in human serum. The presence of mitochondrial antibodies, in combination with clinical observations and other serological tests, can aid in the diagnosis of primary biliary cirrhosis(PBC)



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

(PLEASE DO NOT WRITE BELOW THIS LINE)

Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use   
Per 21 CFR 801.109)

OR

Over-The-Counter-Use