K012053

AUG 2 0 2001

510(k) Summary of Safety and Effectiveness

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:	June 29, 2001
Name:	Diamedix Corporation
Address:	2140 N. Miami Avenue Miami, FL 33127
Contact Person:	Dr. Lynne Stirling
Phone Number:	305-324-2354
Fax Number:	305-324-2388

Device Information:

Trade Name:	Is anti-Cardiolipin Screen Test System
Common Name:	Anti-Cardiolipin ELISA test
Classification Name:	Anticardiolipin immunological test system

Equivalent Device:
Orgentec Anti-cardiolipin Screen ELISA Assay

Device Description: The Is anti-Cardiolipin Screen Test System is an enzyme-linked immunosorbent assay (ELISA) for the semi-quantitative measurement of IgG, IgM and IgA antibodies to cardiolipin in human serum

Intended Use: The assay is intended for the semi-quantitative measurement of IgG, IgM and IgA antibodies to cardiolipin in human serum. The results of the assay can be used as an aid in the assessment of the risk of thrombosis in patients with SLE or SLE-like dosorders.

Principle of the Procedure:

The Is-anti-Cardiolipin Screen Test System is an indirect solid-phase enzyme immunoassay. Highly purified cardiolipin is coated onto plastic microwells and saturated with highly purified human β2-Glycoprotein I. Controls and diluted patient samples are added to the wells. Any patient IgG, IgM or IgA antibodies in the sample bind to the well. Anti-human horseradish peroxidase conjugate is then added After incubation and washing, a substrate solution is then added to each well. In the presence of bound enzyme, the substrate is converted to a blue colored product. After acid additon to stop the reaction, a yellow end product is formed that is read spectrophotometrically at 450 nm (reference 600-630 nm) and is directly proportional to the concentration of cardiolipin IgG, IgM and IgA antibodies in the sample.

SUMMARY OF SAFETY AND EFFECTIVENESS

Performance Characteristics

A. Relative Sensitivity and Specificity

Two hundred and three frozen, retrospective sera were tested for IgG/IgM/IgA cardiolipin antibodies using the Is-anti-Cardiolipin Screen Test Kit and a commercially available ELISA kit for detecting cardiolipin IgG/IgM/IgA antibodies. Based on the results of this testing the relative sensitivity, relative specificity and overall agreement were calculated. The results obtained are shown below. Further resolution of the discordant samples showed that seven samples that were negative in the Is anti-Cardiolipin Screen and positive by the other EIA were negative by a referee EIA method. The remaining ten discordant samples were positive in the referee test.

Is-anti-Cardiolipin Screen

Other EIA	Positive	Negative	*Equivocal
Positive	83	18	3
Negative	0	99	0
*Equivocal	0	0	0

			**95% CI
Relative Sensitivity	83/101	= 82.2 %	74.7-89.6%
Relative Specificity	99/99	= 100.0%	96.3-100.0%
Overall Agreement	182/200	= 91.0%	86.2-94.6%

* Equivocal results were excluded from calculations.

** 95% Confidence Intervals (CI) calculated by the Exact Method.

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 judgement can be made on the comparison's accuracy to predict disease.

B. Clinical Sensitivity and Specificity

A total of three hundred and forty-five frozen retrospective, clinically characterized sera were assayed using the Is anti-Cardiolipin Screen Test Kit in order to assess both the clinical sensitivity and clinical specificity of the test system. These samples consisted of 215 normal sera, 57 sera from patients with diagnosed anti-phospholipid syndrome (APS), 34 sera from patients with systemic lupus erythematosus (SLE), 24 sera from patients with other autoimmune diseases such as Sjogren's Syndrome, scleroderma, polymyositis/dermatomyositis and rheumatoid arthritis and 15 samples from patients with positive RPR titers. Results are summarized below. Note that the all positive samples were also positive when tested by another commercially available ELISA test.

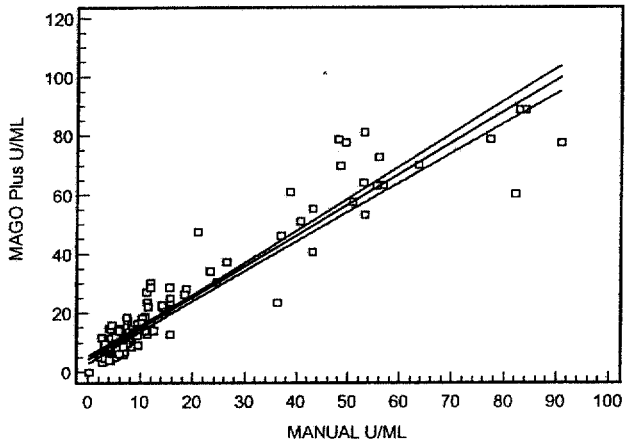
Patient Group	Total	Positive	Negative	Equivocal
Normals	215	9	205	1
APS	57	54	3	0
SLE	34	10	19	5
Other Autoimmune Diseases	24	6	18	0
RPR Positive	15	5	10	0

Clinical Specificity:	# Neg/Total #	
Normals	205/215	= 95.3%
RPR Positive	10/15	= 66.7%
Clinical Sensitivity :	# Pos/Total #	
APS	54/57	= 94.7%
SLE	10/34	= 29.4%
Other Autoimmune Diseases	6/24	= 25.0%

C. Correlation of Manual and MAGO Plus results

The Is anti-Cardiolipin Screen 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 152 serum samples tested for anti-Cardiolipin IgG/IgM/IgA antibodies by both the manual and automated methods, and whose values were within the reportable range of the assay, were plotted. Scattergrams and regression lines of the results obtained with 95% confidence intervals are shown in FIGURE 1. The data indicate good correlation with a Correlation Coefficient (r) of 0.9497.

FIGURE 3: Is anti-Cardiolipin Screen
Manual vs MAGO Plus Correlation



D. Precision

To assess the precision of the Is anti-Cardiolipin Screen Test Kit six serum samples of varying reactivity (two negative and four positive) were tested in triplicate in three separate runs. Precision was assessed both manually and using the MAGO Plus Automated EIA Processor. The results obtained are shown in below.

Manual Intra-Assay and Interassay Precision for Is-anti-Cardiolipin Screen

SERUM	INTRA-ASSAY DAY 1			INTRA-ASSAY DAY 2			INTRA-ASSAY DAY 3			INTERASSAY (n=9)		
	MEAN U/ml	SD	CV%	MEAN U/ml	SD	CV%	MEAN U/ml	SD	CV%	MEAN U/ml	SD	CV%
A	3.3	0.265	8.02	3.3	0.173	5.25	3.7	0.115	3.09	3.4	0.274	7.97
B	2.8	0.404	14.61	3.3	0.058	1.77	3.8	0.252	6.57	3.3	0.521	15.83
C	21.4	0.945	4.41	21.9	0.950	4.33	24.6	1.443	5.86	22.7	1.787	7.88
D	33.4	3.317	9.94	36.0	0.700	1.94	34.7	1.411	4.07	34.7	2.161	6.23
E	52.9	2.957	5.59	58.8	6.851	11.65	72.5	2.207	3.04	61.4	9.527	15.51
F	40.1	1.528	3.81	44.8	0.954	5.83	45.0	1.473	3.27	43.3	2.654	6.13

MAGO Plus Intra-Assay and Interassay Precision for Is-anti-Cardiolipin Screen

SERUM	INTRA-ASSAY DAY 1			INTRA-ASSAY DAY 2			INTRA-ASSAY DAY 3			INTERASSAY (n=9)		
	MEAN U/ml	SD	CV%	MEAN U/ml	SD	CV%	MEAN U/ml	SD	CV%	MEAN U/ml	SD	CV%
A	4.6	0.058	1.25	6.8	0.503	7.44	9.8	1.762	17.91	7.1	2.442	34.51
B	4.2	0.289	6.82	6.5	0.300	4.62	8.7	0.306	3.50	6.5	1.966	30.29
C	27.0	1.115	4.13	36.6	2.600	7.10	36.2	5.101	14.08	33.3	5.555	16.70
D	42.5	1.686	3.97	63.4	3.509	5.53	53.2	6.934	13.03	53.0	9.899	18.67
E	79.3	7.927	10.00	92.2	19.931	21.62	74.9	11.243	15.00	82.1	14.390	17.52
F	46.6	3.287	7.06	66.4	5.179	7.80	63.0	6.933	11.01	58.7	10.290	17.54

Expected Values

The prevalence of anti-cardiolipin antibodies may vary depending on a number of factors such as age, gender, geographical location, race, type of test used and clinical history of individual patients. Antibodies to anti-cardiolipin are generally absent, or have a very low incidence, in the normal healthy population. Increased incidence can occur in the elderly population. A published study has shown a prevalence of 12% in the elderly population (mean age of 70 years) as opposed to 2% for a younger population. In addition, anti-cardiolipin antibodies were detected in 23% of elderly individuals who were also positive for anti-nuclear antibodies (12).

In the present study, the expected values for a normal, healthy population were assessed by testing sera from one hundred and forty-eight S. Florida blood donors (ninety-eight males and fifty females) in the Is-anti-Cardiolipin Screen Test Kit. One hundred and forty sera (94.6%) were negative for antibodies, eight sera (5.4%) were positive and none were equivocal. The age distribution and antibody prevalence for this population are shown in the table below.

The expected values for a clinical population were assessed by testing fifty-seven sera from patients with a diagnosis of anti-phospholipid syndrome (APS) in the Is-anti-Cardiolipin Screen Test Kit. Fifty-four (94.7%) were positive, three (5.3%) were negative and none were equivocal for IgG/IgM/IgA antibodies.

Histograms showing the distribution of values for these normal and clinical populations are shown in FIGURES 1 and 2.

Age Distribution and Prevalence of anti-Cardiolipin IgG/IgM/IgA in a Normal S. Florida Population

	Number of Donors	Prevalence
Total Number	148	
Geographic Location:	South Florida : 148	5.4%
Age		
10-19	7	14.3%
20-29	36	0.0%
30-39	73	8.2%
40-49	22	4.5%
50-59	8	0.0%
60-69	2	0.0%

FIGURE 1

Distribution of anti-Cardiolipin IgG/IgM/IgA in a Normal Population

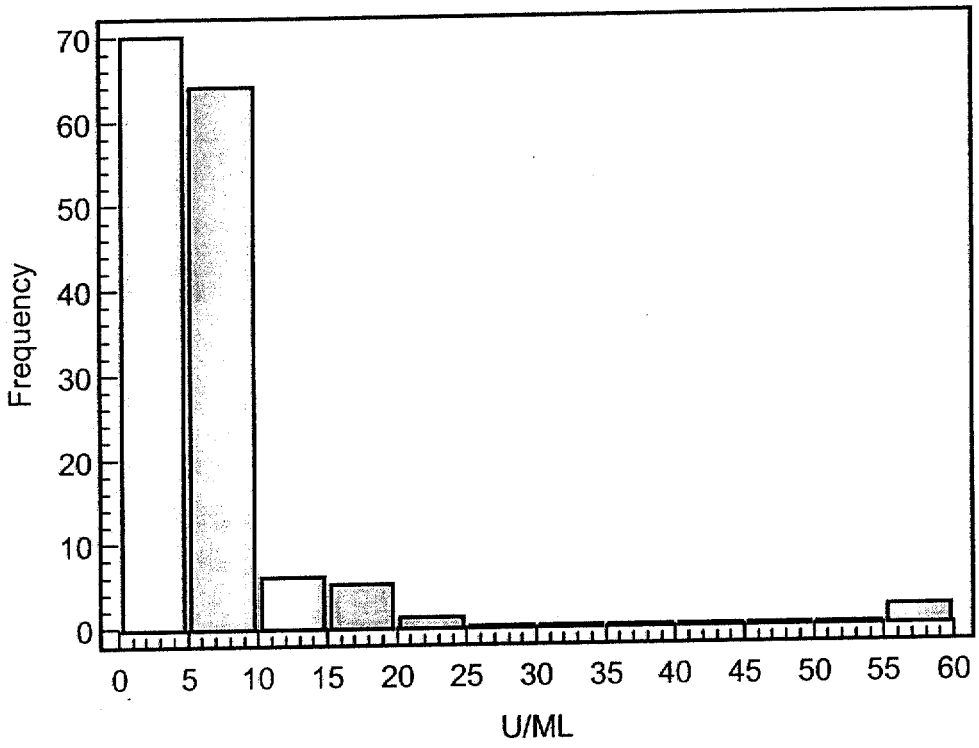
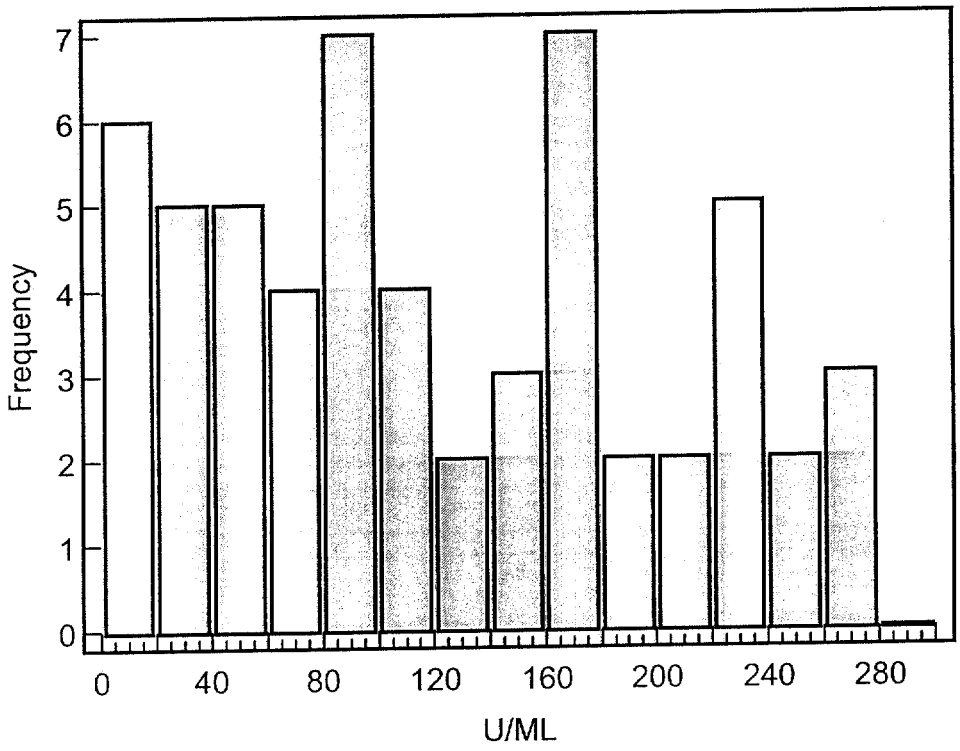


FIGURE 2

Distribution of anti-CardiolipinIgG/IgM/ IgA in a Clinical Population



DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

AUG 2 0 2001

Lynne Stirling, Ph. D.
Diamedix Corporation
2140 N. Miami Avenue
Miami, Florida 33127

Re: K012053
Trade/Device Name: Diamedix Is-anti-Cardiolipin Screen Test System
Regulation Number: 21 CFR 866.5660
Regulatory Class: Class II
Product Code: MID
Dated: June 29, 2001
Received: July 2, 2001

Dear Dr. Stirling:

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 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 Good Manufacturing Practice for Medical Devices: General (GMP) regulation (21 CFR Part 820) and that, through periodic GMP 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.

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" (21CFR 807.97). Other general information on your responsibilities under the Act may be obtained 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,

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

Appendix G. Indications for Use Statement

INDICATIONS FOR USE STATEMENT

510(K) NUMBER : K012053

DEVICE NAME : Is anti-Cardiolipin Screen Test System

Indications for Use : The Diamedix Is anti-Cardiolipin Screen Test Kit is an indirect enzyme immunoassay (EIA) for the semi-quantitative measurement of IgG, IgM and IgA antibodies to cardiolipin in human serum as an aid in the assessment of the risk of thrombosis in patient with SLE or SLE-like disorders. These reagents can be used either manually or in conjunction with the MAGO® Plus Automated EIA Processor.

Josephini Bautista

(Division Sign-Off)
Division of Clinical Laboratory Devices

510(k) Number K012053