K974694

MAR - 3 1998

Appendix E. 510(k) Summary of Safety and Effectiveness

The following section is included as required by the Safe Medical Device Act (SMDA) of 1990.

Name:	Diamedix Corporation
Address:	2140 N. Miami Avenue Miami, FL 33127
Contact Person:	Dr. Lynne Stirling
Phone Number:	305-324-2354
Fax Number:	305-324-2585

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: K974694

Applicant Information:

Date Prepared:	December 15, 1997
Name:	Diamedix Corporation
Address:	2140 N. Miami Avenue Miami, FL 33127
Contact Person:	Dr. Lynne Stirling
Phone Number:	305-324-2354
Fax Number:	305-324-2585

Device Information:

Trade Name:	Is-dsDNA Test System
Common Name:	Anti-DNA EIA Test
Classification Name:	Anti-DNA Antibody

Equivalent Device:
varelisa dsDNA Antibodies

Device Description: The Is-dsDNA Test Kit System is an enzyme-linked immunosorbent assay (ELISA) for the detection and quantitation of IgG to DNA in human serum

Intended Use: The assay is intended for use in detecting IgG antibodies to dsDNA in a single human serum sample. The results of the assay are to be used as an aid in the diagnosis of SLE.

Principle of the Procedure:

The Is-dsDNA Test System is an enzyme-linked immunosorbent assay to detect IgG toDNA in human serum. Purified DNA is attached to a solid phase microtiter well. Diluted test sera are added to each well. If antibodies which recognize the DNA antigen are present in the patient sample they will bind to the antigen in the well. After incubation, the wells are washed to remove unbound antibody. An enzyme labeled anti-human immunoglobulin (conjugate) is added to each test well. If antibody is present the enzyme-linked antibody will bind to it. After incubation, the wells are washed to remove unbound conjugate. A substrate solution is then added to each well. If enzyme is present from prior step, the reaction is stopped and the color intensity is measured photometrically producing an indirect measure of the specific antibody present in the patient sample.

SUMMARY OF SAFETY AND EFFECTIVENESS

Performance Charactistics

A. Comparison Testing

The Diamedix Is-dsDNA Test Kit was evaluated relative to another commercially available anti-dsDNA test kit that is also standardized against the Wo/80 WHO Standard. Two hundred sera from normal blood donors and 50 sera from SLE patients were tested by the Is-dsDNA test kit and the comparative method. Testing was performed both manually and using the MAGO Automated Processor. Results are shown in Table 1.

TABLE 1

	Manual			MAGO		
	# of Sera	%	95% CI	# of Sera	%	95% CI
Relative Sensitivity	37/39	94.9	82.7-99.4	29/32	90.6	75.0-98.0
Relative Specificiity	199/199	100.0	98.2-100	201/201	100.0	98.2-100.0
Overall Agreement	236/238*	99.2	97.0-99.9	230/233**	98.7	96.3-99.7

* 12 equivocal/borderline results excluded from calculations

** 16 equivocal/borderline results excluded from calculations; 1 sample QNS

For manual testing there were three samples negative by the Is-dsDNA and positive by the comparative method. When these samples were tested by a referee method two were positive and one was negative. For MAGO testing there were two samples that were negative in the Is-dsDNA and positive in the comparative method. When these samples were tested by a referee method one was negative and one was positive.

B. Linearity

Figures 1 and 2 show typical examples of the Is-dsDNA linearity. These figures depict the results of the in-house reference standard (which has been standardized against the Wo/80 Standard) tested by the Is-dsDNA after serial two-fold manual dilution in Sample Diluent. Separate dilutions were tested both manually and with MAGO. The results demonstrate a high degree of linearity for the Is-dsDNA Test Kit throughout the reportable range of the assay.

FIGURE 1 - MANUAL LINEARITY

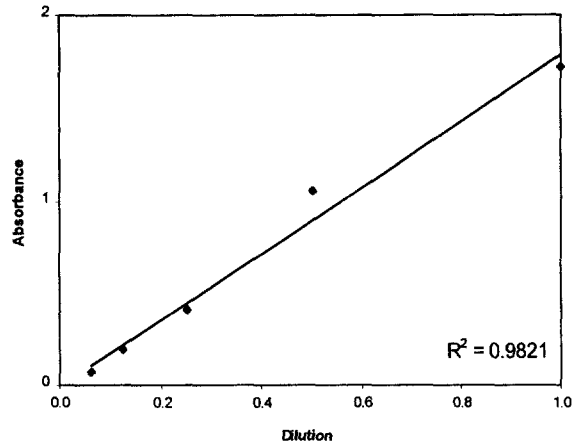
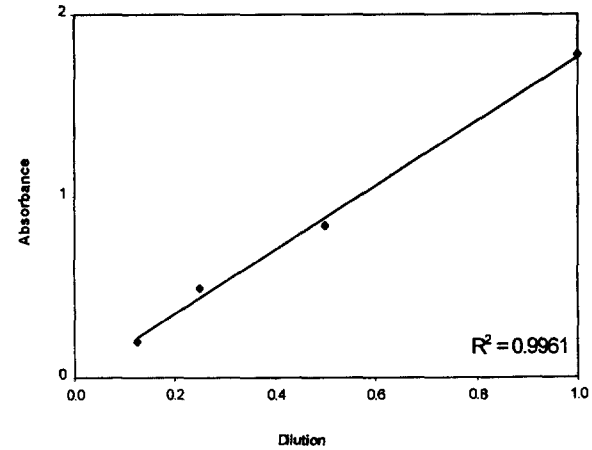


FIGURE 2 - MAGO LINEARITY



C. Precision

The precision of the Is-dsDNA test kit was determined by testing six different sera and the kit calibrator and controls in triplicate in two runs on three different days. Precision was evaluated both manually and using the MAGO. The intra-and interassay precision is shown in Tables 2 and 3.

TABLE 2 **Is-dsDNA Precision (Manual)**

	Intra-assay *									Interassay **		
	Day 1			Day 2			Day 3					
SERUM	Mean	SD	%CV	Mean	SD	%CV	Mean	SD	%CV	Mean	SD	%CV
A (Neg)	7.8	1.6	N/A	6.7	0.7	N/A	7.4	0.9	N/A	7.3	1.2	N/A
B (Neg)	6.0	0.9	N/A	4.9	0.2	N/A	5.5	0.3	N/A	5.5	0.7	N/A
C (Pos)	78.2	10.1	12.9	71.1	5.0	7.0	75.0	2.7	3.6	74.8	7.0	9.3
D (Pos)	114.4	10.3	9.0	107.9	9.8	9.0	122.9	11.2	9.1	115.1	11.7	10.2
E (Pos)	202.8	16.2	8.0	199.0	27.7	13.9	232.3	27.3	11.7	211.4	27.5	13.0
F (Pos)	364.2	26.0	7.1	336.3	10.5	3.1	376.6	17.0	4.5	359.1	24.9	6.9
Cal.	372.9	26.1	7.0	346.0	37.4	10.8	384.1	20.4	5.3	367.7	31.7	8.6
Pos.	79.0	4.1	5.2	75.2	5.7	7.6	82.9	4.4	5.4	79.1	5.6	7.0
Neg.	7.1	2.1	N/A	5.6	1.3	N/A	5.7	1.4	N/A	6.1	1.7	N/A

TABLE 3 **Is-dsDNA Precision (MAGO)**

	Intra-assay *									Interassay **		
	Day 1			Day 2			Day 3					
SERUM	Mean	SD	%CV	Mean	SD	%CV	Mean	SD	%CV	Mean	SD	%CV
A (Neg)	8.9	3.7	N/A	5.5	4.1	N/A	18.5	8.0	N/A	11.0	7.7	N/A
B (Neg)	9.0	1.9	N/A	6.6	4.4	N/A	9.4	2.1	N/A	8.3	3.1	N/A
C (Pos)	81.7	8.5	10.4	78.8	11.7	14.9	85.3	12.3	14.4	81.9	10.7	13.1
D (Pos)	114.7	13.5	11.8	102.6	13.4	13.0	112.8	18.7	16.6	110.0	15.5	14.1
E (Pos)	249.9	34.7	13.9	280.1	42.4	15.1	285.7	40.0	14.0	271.9	40.2	14.8
F (Pos)	360.3	12.6	3.5	366.5	15.0	4.1	398.0	20.8	5.2	374.9	23.0	6.1
Cal.	373.4	20.9	5.6	390.6	26.5	6.8	391.7	28.5	7.3	385.2	25.4	6.6
Pos.	100.1	15.6	15.6	102.3	10.4	10.1	104.2	7.8	7.5	102.2	11.2	11.0
Neg.	17.5	7.2	N/A	13.2	5.5	N/A	23.4	12.5	N/A	18.0	9.4	N/A

* n = 6 ** n = 18

D. Crossreactivity

The absence of cross-reactivity in the Is-dsDNA was established by testing several sera (samples 1 to 11) containing some type of autoantibody by other methods, but with no antibody to ds DNA by other methods. These results are shown in Table 4.

TABLE 4

Sample #	Is-dsDNA IU/ml	Interp	Specificity
1	7.7	NEG	SSA, SSB
2	9.3	NEG	SSA, SSB, Sm/RNP
3	14.1	NEG	Sm/RNP
4	4.1	NEG	Jo-1
5	9.1	NEG	Jo-1
6	12.3	NEG	Scl-70
7	22.2	NEG	Scl-70
8	4.1	NEG	SSA, Sm/RNP
9	15.3	NEG	SSA, SSB
10	11.7	NEG	Sm, Sm/RNP
11	18.9	NEG	Sm, Sm/RNP

In addition to the samples listed in Table 4, 49 samples containing varying levels of single-stranded DNA were also tested in the Is-dsDNA test Kit. Thirty seven samples were negative, one sample was borderline and eleven samples were positive. All eleven positive samples were also positive by at least two other commercially available tests for detecting dsDNA antibodies which would indicate that these samples indeed contain both ssDNA and dsDNA.

E. Expected Values

Antibodies to dsDNA are found in 60-70% of patients with SLE and are rarely present in normal populations. The expected values in the normal population were evaluated by assaying 200 normal donor sera collected in South Florida. Figures 3 and 5 show the distribution of dsDNA results in the normal population performed manually and on MAGO respectively. The distribution of IU/ml values for 50 sera from SLE patients is shown in Figures 4 and 6 performed manually and on MAGO respectively.

FIGURE 3 - MANUAL

Normals

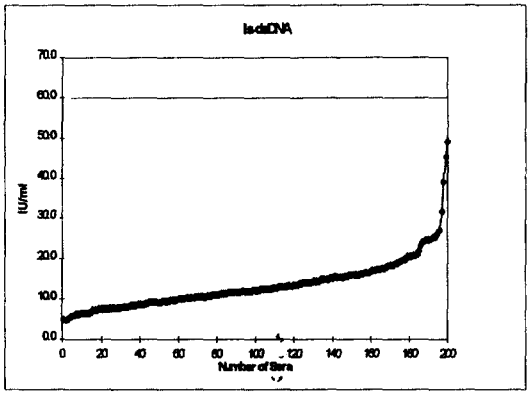


FIGURE 4 - MANUAL

SLE patients

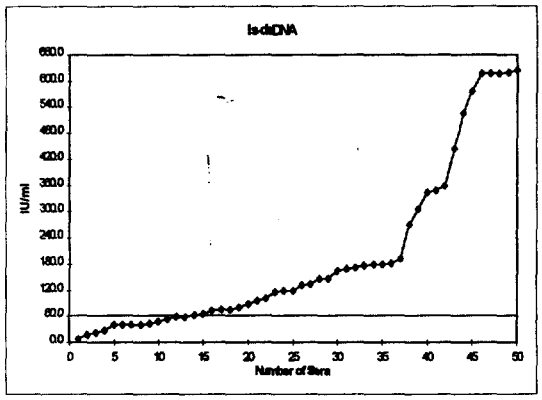


FIGURE 5 - MAGO

Normals

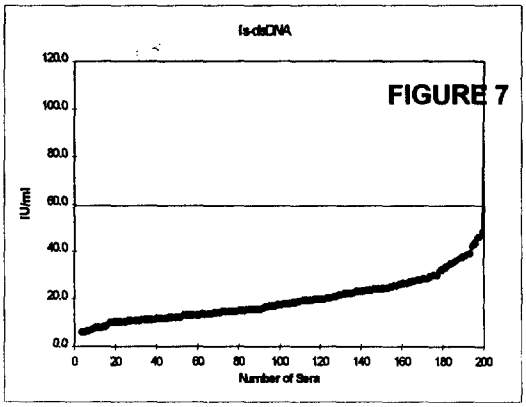


FIGURE 6 - MAGO

SLE patients

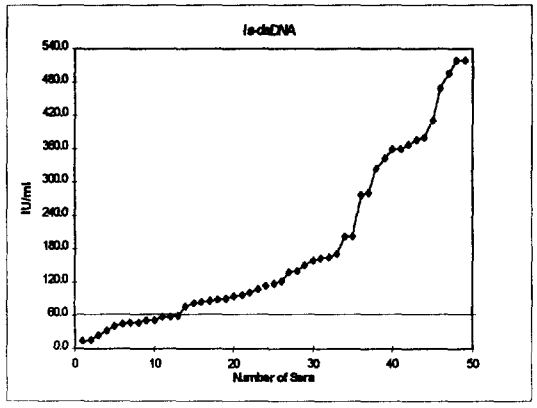
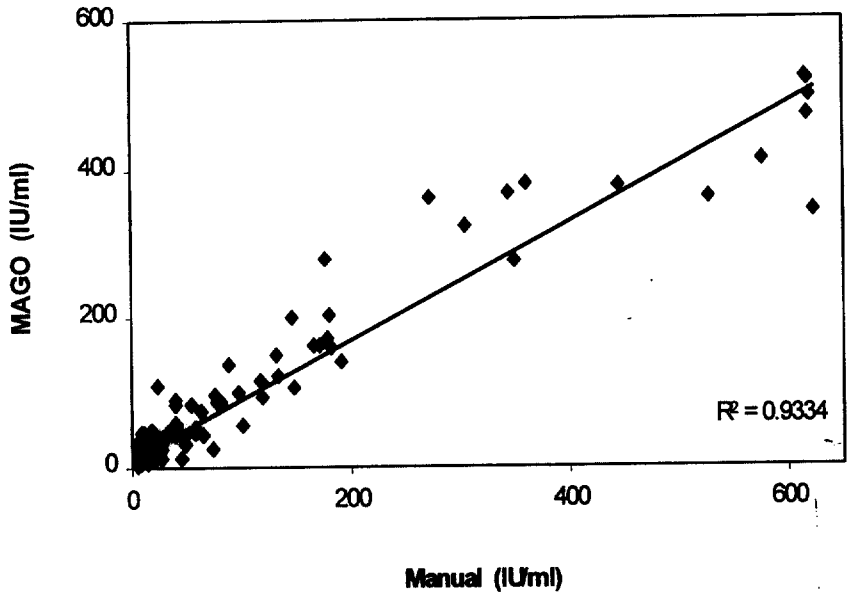


FIGURE 7

F. Correlation of Manual and Mago Results

Correlation of manual and MAGO IU/ml values for 249 samples tested in the Is-dsDNA Test Kit is shown in Figure 7.

FIGURE 7



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

Lynne Stirling, Ph.D.
Vice President, Regulatory Affairs
Diamedix Corporation
2140 N. Miami Avenue
Miami, Florida 33127

MAR - 3 1998

Re: K974694
Trade Name: Is-dsDNA Test System
Regulatory Class: II
Product Code: LRM
Dated: December 15, 1997
Received: December 16, 1997

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 (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.

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 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

510(k) Number (if known): K974694

Device Name:_____

_____

Indications For Use:

Indications for Use :*The Diamedix Is-dsDNA an Enzyme Immunoassay (EIA) for the detection and quantitative determination of IgG antibodies in human serum to DNA antigen as an aid in the diagnosis of systemic lupus erythematosus in patients with clinical signs of the disease. These reagents can be used either manually or in conjunction with the MAGO® Automated EIA Processor.*

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K974694

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

(Optional Format 1-2-96)