FEB 12 2008

K073145

510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY

A. 510(k) Number:
k073145

B. Purpose for Submission:
New device

C. Measurand:
Anti-human tissue transglutaminase (htTG) IgG and IgA antibodies

D. Type of Test:
Semi-quantitative ELISA

E. Applicant:
INOVA Diagnostics, Inc.

F. Proprietary and Established Names:
QUANTA Lite™ h-tTG Screen

G. Regulatory Information:

1. Regulation section:
   21 CFR § 866.5660 Multiple autoantibodies immunological test systems
2. Classification:
   Class II
3. Product codes:
   MVM, Autoantibodies, Endomysial (Tissue Transglutaminase)
4. Panel:
   Immunology 82

H. Intended Use:

1. Intended use(s):
   The QUANTA Lite™ h-tTG Screen is an enzyme-linked immunosorbent assay (ELISA) for the semi-quantitative detection of IgA and IgG antibodies to human tissue transglutaminase (htTG) in human serum. The presence of these antibodies can be used in conjunction with clinical findings and other laboratory tests to aid in the diagnosis of both IgA sufficient and IgA deficient celiac disease as well as dermatitis herpetiformis
2. Indication(s) for use:
   Same as Intended use.
3. Special conditions for use statement(s):
   For prescription only.
4. Special instrument requirements:
   Microplate reader capable of measuring OD at 450 nm (or 650 for dual wavelength readings)

I. Device Description:
Each device contains the following: polystyrene microplate strips with breakaway (12 (1x8) microwells coated with human tissue transglutaminase antigen with holder; high positive, low positive and negative controls (human serum); HRP wash concentrate; HRP sample diluent; HRP IgG and IgA (goat) anti-human conjugate; TMB chromogen; and HRP stop solution (0.344M sulfuric acid).

J. Substantial Equivalence Information:

1. Predicate device name(s):
   QUANTA Lite™ h-tTG IgA
   QUANTA Lite™ h-tTG IgG
2. Predicate K number(s):
   k011566 (h-tTG IgA)
   k011570 (h-tTG IgG)
3. Comparison with predicate:

Similarities			
Item	New Device	Predicate Device	
	QUANTA Lite™ h-tTG Screen	QUANTA Lite™ h-tTG IgA	QUANTA Lite™ h-tTG IgG
Technology	ELISA	Same	Same
Antigen	Purified h-tTG antigen	Same	Same
Measurement	Semi-quantitative	Same	Same
Assay Platform	96 well microtiter plate	Same	Same
Sample type and dilution	Serum at 1:101	Same	Same
Sample volume required	5 µL	Same	Same
Low Positive, High positive and Negative Control	Pre-diluted human serum. Ready to use.	Same	Same
Diluent	HRP sample diluent	Same	Same
HRP Wash concentrate	40X	Same	Same
Substrate	TMB Chromogen	Same	Same
HRP Stop solution	0.344M Sulfuric Acid	Same	Same
Assay washing step	Two steps	Same	Same
Incubation times	30-30-30 minutes	Same	Same
Spectrophotometric OD Reading	450nm (or 620 for dual wavelength)	Same	Same
Detection Method	Colorimetric	Same	Same
Cut-off	20.0 units	Same	Same

Differences			
Item	Device	Predicate	
	QUANTA Lite™ h-tTG Screen	QUANTA Lite™ h-tTG IgA	QUANTA Lite™ h-tTG IgG
Intended use	For the semi-quantitative detection of IgA and IgG antibodies to human tissue transglutaminase	For the semi-quantitative detection of IgA antibodies to tissue transglutaminase	For the semi-quantitative detection IgG antibodies to tissue transglutaminase

Differences			
Item	Device	Predicate	
	(htTG) in human serum.	(endomysium) in human serum.	(endomysium) in human serum.
Indications for Use	Aid in the diagnosis of both IgA sufficient and IgA deficient celiac disease as well as dermatitis herpetiformis	Aid in the diagnosis of certain gluten sensitive enteropathies such as celiac disease and dermatitis herpetiformis	Aid in the diagnosis of certain gluten sensitive enteropathies such as celiac disease and dermatitis herpetiformis. This test is intended for providing added sensitivity when testing IgA deficient patients
Enzyme Conjugate	Horseradish Peroxidase, Goat anti-human IgA and IgG	Horseradish Peroxidase, Goat anti-human IgA	Horseradish Peroxidase, Goat anti-human IgG
Result Interpretation	Neg = <20 Units Pos = ≥20 Units	Neg = <20 Units Wk Pos = 20 -30 Mod to Strong Positive = >30	Neg = <20 Units Wk Pos = 20 -30 Mod to Strong Positive = >30

K. Standard/Guidance Document Referenced (if applicable):

CLSI (NCCLS) H18-A3 Sample storage conditions and CLSI (NCCLS) C24-A3 Appropriate Quality Control Practices.

L. Test Principle:

Native human tissue transglutaminase is bound to the wells of a polystyrene microwell plate under conditions that will preserve the antigen in its native state. Pre-diluted controls and diluted patient sera are added to separate wells, allowing any h-tTG IgA or IgG antibodies present to bind to the immobilized antigen. Unbound sample is washed away and an enzyme labeled anti-human IgA and IgG conjugate is added to each well. A second incubation allows the enzyme labeled anti-human IgA and IgG to bind to any patient antibodies, which have become attached to the microwells. After washing away any unbound enzyme labeled anti-human IgA and IgG, the remaining enzyme activity is measured by adding a chromogenic substrate and measuring the intensity of the color that develops. The assay can be evaluated spectrophotometrically by measuring and comparing the color intensity that develops in the patient wells with the color in the control wells

M. Performance Characteristics (if/when applicable):

1. Analytical performance:
   a. *Precision/Reproducibility:*

The intra-assay precision was determined by testing nine serum samples five times on one kit lot by one operator. Results showed that 4 samples with high anti-h-tTG concentrations (32.6-46.8 units) had %CV of 1.2-7.7%, 3 samples close to the cut-off (18.3-22.3 units) had % CV of 2.1-5.8% and 2 negative samples (7.7-13.5 units) had %CV of 5.6-7.2% (see table below).

Intra-assay Performance of QUANTA Lite™ h-tTG Screen ELISA

Sample	1	2	3	4	5	6	7	8	9
Mean units	44.3	32.6	46.8	22.3	36.1	13.5	18.3	19.1	7.7
SD	1.6	1.5	0.5	1.3	0.5	0.8	0.5	0.4	0.6
CV %	3.5	4.7	1.2	5.8	1.5	5.6	2.6	2.1	7.2

The inter-assay precision was determined by testing twelve serum samples in duplicate six times for five days on one kit lot by one operator. Results showed that 5 samples with high anti-h-tTG concentrations (31.3-49.3 units) had %CV of 2.2-9.3%, 3 samples close to the cut-off (16.0-23.0 units) had % CV of 4.8-11.3% and 4 negative samples (5.2-14.5units) had %CV of 6.1-18.4% (see table below).

Inter-assay Performance for QUANTA Lite™ h-tTG Screen ELISA

Sample	A	B	C	D	E	F	G	H	I	J	K	L
Mean units	46.4	31.3	48.7	23.0	35.0	14.5	16.0	6.0	10.3	49.3	17.8	5.2
SD	1.4	1.6	1.1	1.1	3.3	0.9	1.8	1.1	1.9	1.3	1.8	0.8
CV %	3.0	5.2	2.2	4.8	9.3	6.1	11.3	18.0	18.4	2.6	10.0	15.4

b. *Linearity/assay reportable range:*
Not applicable.

c. *Traceability, Stability, Expected values (controls, calibrators, or methods):*
There are no reference standards for htTG. The positive and negative controls are prepared in-house and arbitrary units are assigned during the development process.
Stability: The expiration date claim is one year for the QUANTA Lite™ h-tTG Screen.

d. *Detection limit:*
Not applicable.

e. *Analytical specificity:*
Interference by endogenous substances: No data provided. The package insert states that grossly hemolyzed, lipemic, icteric, microbially contaminated, heat-treated samples or specimens containing visible particulate should be avoided in this assay.
Crossreactivity with other autoantibodies: The QUANTA Lite™ h-tTG Screen was tested with 44 sera containing other autoantibodies specific for: Chromatin (4), Centromere (4), GBM (4), SS-B (4), RNP (5), SCL-70 (6), Jo-1 (5), Sm (4), SS-A (4), and TPO (4). All samples were negative with the QUANTA Lite™ h-tTG Screen with a mean value of 4.6 U/mL which is below the 20 unit cut-off.

f. Assay cut-off:

The assay cut-off of 20 units for the assay was established from 381 random asymptomatic healthy individuals residing in the United States. Age and gender were available for 269 samples and unavailable for the remaining 112 samples. The age ranges were 14-76 years and included 141 male subjects and 128 female subjects. The assay specificity was 97.9% (373/381). The mean value of 381 samples was 8.6 units. The standard deviation (SD) of the samples was 4.4 units. The mean value was 2.5SDs below the cut-off value of 20 units. Of the 8 positive samples, six were weak positive with values from 20.3 – 28.4 units; one moderate positive value was 32.4 units and one strong positive value was 54.9 units which was believed to be from a true celiac patient based on a positive IgA anti-h-tTG result of 72.4 units.

2. Comparison studies:

a. Method comparison with predicate device:

Testing was performed on 125 samples from four celiac disease reference labs and 81 normal samples. The Positive Percent Agreement was 100.0% (52/52); the Negative Percent Agreement was 97.1% (451/454) and the Overall Agreement was 97.4% (493/506).

		QUANTA Lite™ h-tTG IgA or IgG		
		Positive	Negative	Total
QUANTA Lite™ h-tTG Screen	Positive	52	13*	65
	Negative	0	441	441
	Total	52	454	506

* Of the 13 samples found to be h-tTG Screen positive, yet negative on both h-tTG IgA and h-tTG IgG kits, 3 from celiac patients on GFDs, two from 1st degree relatives, and eight from apparently healthy subjects. All 13 samples had values under 30 units.

b. Matrix comparison:

Serum is the only recommended matrix.

3. Clinical studies:

a. Clinical Sensitivity and specificity:

The clinical sensitivity and specificity study were evaluated on 517 clinically defined samples from patients with the following diagnosis: 23 Celiacs untreated, 5 Celiac IgA Deficient, 18 Celiac 1st degree relatives, 13 Dermatitis Herpetiformis, 44 Disease Controls, and 414 Healthy individuals. The QUANTA Lite™ h-tTG Screen assay sensitivity and specificity were 87.8% (36/41) and 97.1% (462/476) respectively (refer to table below).

		Diagnosis		
		Positives (Celiacs untreated and IgA deficient)	Negative (1st degree relatives, Disease Controls and Healthy Controls)	Totals
QUANTA LITE™ h-tTG Screen	Positive	36	14	50
	Negative	5	462	467
	Total	41	476	517

In addition, a summary of the results for the individual diagnosis is listed below:

	Diagnosis	n	Positive h-tTG Screen	% Sensitivity
Patient Groups	Celiacs untreated	23	23	100%
	Celiac IgA Deficient	5	4	80%
	Celiacs on Gluten-Free Diet	33*	15	45%
	1st degree relatives	18	4	22%
	Dermatitis Herpetiformis	13	9	69%
	Disease Controls	44	0	0%
Normals		414	10**	2.4%

*33 GFD Celiacs were excluded from the previous sensitivity/ specificity table.
**1 of the 10 positives was found to be positive on individual h-tTG ELISA assays and also positive for tTG by fluid phase RIA.

b. Other clinical supportive data (when a. is not applicable):
Not applicable.

4. Clinical cut-off:
Same as assay cut-off.
5. Expected values/Reference range:
Expected values in the normal population should be negative.

N. Proposed Labeling:

The labeling is sufficient and it satisfies the requirements of 21 CFR Part 809.10.

O. Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

FEB 12 2008

INOVA Diagnostics, Inc.
c/o Mr. Joseph Phillips
Group Lead Development
9900 Old Grove Rd.
San Diego, CA 92131-1638

Re: k073145
Trade/Device Name: QUANTA Lite™ h-tTG Screen
Regulation Number: 21 CFR 866.5660
Regulation Name: Multiple autoantibodies immunological test system
Regulatory Class: Class II
Product Code: MVM
Dated: February 5, 2008
Received: February 6, 2008

Dear Mr. Myers:

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 the Code of Federal Regulations, Title 21, Parts 800 to 898. 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 Part 801); 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 (240) 276-0450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding postmarket surveillance, please contact CDRH's Office of Surveillance and Biometric's (OSB's) Division of Postmarket Surveillance at 240-276-3474. For questions regarding the reporting of device adverse events (Medical Device Reporting (MDR)), please contact the Division of Surveillance Systems at 240-276-3464. 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 (240) 276-3150 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Robert L. Becker, Jr., M.D., Ph.D.
Director
Division of Immunology and Hematology 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): K073145

Device Name: QUANTA Lite™ h-tTG Screen

Indications for Use:

The QUANTA Lite™ h-tTG Screen is an enzyme-linked immunosorbent assay (ELISA) for the semi-quantitative detection of IgA and IgG antibodies to human tissue transglutaminase (h-tTG) in human serum. The presence of these antibodies can be used in conjunction with clinical findings and other laboratory tests to aid in the diagnosis of both IgA sufficient and IgA deficient celiac disease as well as dermatitis herpetiformis.

Prescription Use X 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) K073145