K102952

510(k) SUMMARY

CONTACT

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DEC - 3 2010

NAME OF DEVICE

Trade Name:	ProAdeno™+ Assay
Regulation Number:	21 CFR 866.3980
Classification Name:	Respiratory viral panel multiplex nucleic acid assay

PREDICATE DEVICE

- K063765, K081483, K091667 – ID Tag Respiratory Virus Panel, Luminex Molecular Diagnostics

INTENDED USE

The ProAdeno™+ Assay is a multiplex Real Time PCR *in vitro* diagnostic test for the qualitative detection of human Adenovirus (HAdV) DNA isolated and purified from nasopharyngeal (NP) swab specimens obtained from individuals exhibiting signs and symptoms of acute respiratory infection. This test is intended for use to aid in the diagnosis of HAdV infections in humans in conjunction with other clinical and laboratory findings. The test detects, but does not differentiate, serotypes 1-51.

Negative results do not preclude HAdV infection and should not be used as the sole basis for treatment or other patient management decisions.

PRODUCT DESCRIPTION

The ProAdeno+ Assay enables detection of human adenovirus and an Universal Internal Control.

An overview of the procedure is as follows:

1. Collect nasopharyngeal swab specimens from symptomatic patients using a polyester, rayon or nylon tipped swab and place into viral transport medium.
2. Add Universal Internal Control (UIC) to every sample to monitor for inhibitors present in the specimens.
3. Perform isolation and purification of nucleic acids using a MagNA Pure LC System (Roche) and the MagNA Pure Total Nucleic Acid Isolation Kit (Roche) or a NucliSENS® easyMAG™ System (bioMérieux) and the Automated Magnetic Extraction Reagents (bioMérieux).
4. Add purified nucleic acids to ProAdeno+ Supermix included in the ProAdeno+ Assay Kit. The ProAdeno+ Mix contains oligonucleotide primers, target-specific oligonucleotide probes, and a Taq DNA polymerase. The primers are complementary to a highly conserved region of human adenovirus. The probes are dual-labeled with a reporter dye attached to the 5'-end and a quencher dye attached to the 3'-end (see table below).
5. Perform amplification of DNA in a Cepheid SmartCycler® II instrument. In this process, the probe anneals specifically to the template followed by primer extension and amplification. The ProAdeno+ Assay is based on Taqman reagent chemistry, which utilizes the 5' – 3' exonuclease activity of the Taq polymerase to cleave the probe thus separating the reporter dye from the quencher. This generates an increase in fluorescent signal upon excitation from a light source. With each cycle, additional reporter dye molecules are cleaved from their respective probes, further increasing fluorescent signal. The amount of fluorescence at any given cycle is dependent on the amount of amplification products present at that time. Fluorescent intensity is monitored during each PCR cycle by the real-time instrument.

Analyte	Gene Targeted	Probe Fluorophore	Absorbance Peak	Emission Peak	Instrument Channel
Adenovirus	hexon	FAM	495 nm	520 nm	FAM
Universal Internal Control	NA	Quasar 670	647 nm	667 nm	Cy5

SUBSTANTIAL EQUIVALENCE

Clinical Performance

Performance characteristics of the ProAdeno+ Assay were established during a prospective study at 4 U.S. clinical laboratories from October 2009- August 2010. Samples used for this study were nasopharyngeal (NP) swab specimens that were collected for routine respiratory viral testing by each site.

The reference method was rapid culture (shell vial) followed by direct fluorescent antibody (DFA) screening and identification.

A total of 1167 NP swab samples were tested with the ProAdeno+ Assay and by culture. One sample that initially gave unresolved results remained unresolved upon retesting with the ProAdeno+ Assay and is not included in the analysis below. The sample was culture negative.

Discrepant analysis for samples where ProAdeno+ Assay and culture results were in disagreement was performed using PCR primers obtained from literature followed by sequencing.

Results from Prospective Study

Adenovirus Comparison Results

		Reference Method			
		Positive	Negative	Total	Comments
ProAdeno + Assay	Positive	39	49[a]	**88**	Sensitivity 97.5% (87.1% - 94.3%) 95% CI
	Negative	1[b]	1077	**1078**	Specificity 95.6% (94.3% - 96.7%) 95% CI
	Total	**40**	**1126**	**1166**	

[a]35 samples positive for HAdV by bi-directional sequence analysis, 14 samples negative for HAdV by bi-directional sequence analysis.
[b]1 sample negative for HAdV by bi-directional sequence analysis

Gender and Age Demographic Detail for ProAdeno+ Prospective Study

Age Group	Total (N)	Prospective Total # Positive by ProAdeno+ Assay	Observed Prevalence
< 2 years	485	58	12.0%
2-5 years	184	18	9.8%
6-11 years	101	7	6.9%
12-18 years	67	3	4.5%
19-64 years	240	2	0.8%
>65 years	89	0	0%
Total	1166	88	7.5%

Reproducibility

The reproducibility of the ProAdeno+ Assay was evaluated at 3 laboratory sites. Reproducibility was assessed using a panel of 12 simulated clinical samples that included two adenovirus serotypes at medium and low positive levels (near the assay limit of detection, ≥95% positive) and two high negative samples (high negative-1 at 0.1xLoD; high negative-2 at 0.001xLoD). Panels and controls were tested at each site by 2 operators for 5 days (12 samples and 3 controls X 2 operators X 5 days X 3 sites = 450). The overall percent agreement for the ProAdeno+ Assay was 99.2%.

	Panel Member ID	HAdV-3 high negative-2[a]	HAdV-3 high negative-1	HAdV-3 low positive	HAdV-3 medium positive	HAdV-31 high negative-2[a]	HAdV-31 high negative-1	HAdV-31 low positive	HAdV-31 medium positive	Extraction Control	Adenovirus DNA Control	Negative Control[a]	Total % Agreement
	Concentration	0.001 X LoD	0.1X LoD	2X LoD	10X LoD	0.001 X LoD	0.1X LoD	2X LoD	10X LoD	N/A	N/A	N/A	
Site 1[e]	Agreement with Expected Result	15/15	5/15[b]	15/15	15/15	15/15	10/15[b]	15/15	15/15	10/10	10/10	10/10	120/120[d] (100%)
	Mean C_T Value	36.9	40.4[c]	35.8	33.9	37.2	38.6[c]	33.8	29.3	31.8	32.5	36.7	
	% CV	2.5	2.8[c]	1.2	1.0	2.2	6.2[c]	1.7	1.4	0.5	0.8	1.0	
Site 2[f]	Agreement with Expected Result	14/14	3/16[b]	16/16	14/14	15/16	6/14[b]	14/14	16/16	11/11	11/11	11/11	122/123[d] (99.2%)
	Mean C_T Value	36.5	39.8[c]	36.9	34.9	36.9	39.6[c]	35.1	30.9	34.9	33.3	36.5	
	% CV	1.0	3.5[c]	1.3	0.9	2.0	6.6[c]	2.8	3.4	2.2	1.2	1.1	
Site 3[f]	Agreement with Expected Result	15/15	2/15[b]	15/15	15/15	13/15	3/15[b]	15/15	15/15	10/10	10/10	10/10	118/120[d] (98.3%)
	Mean C_T Value	36.5	40.1[c]	36.7	34.6	36.3	39.2[c]	34.9	30.8	32.3	32.5	36.5	
	% CV	1.1	5.3[c]	2.6	1.1	1.3	6.1[c]	1.3	1.1	1.0	1.5	1.1	
	Total Agreement with Expected Result	44/44	10/46[b]	46/46	44/44	43/46	19/44[b]	44/44	46/46	31/31	31/31	31/31	360/363[d] (99.2%)
	95% CI	92.0-100%	N/A	92.3-100	92.0-100%	82.1-98.6%	N/A	92.0-100%	92.3-100	88.8-100%	88.8-100%	88.8-100%	98.0-99.9%
	Overall Mean C_T Value	36.6	40.2[c]	36.5	34.4	36.8	39.0[c]	34.6	30.3	33.1	32.8	36.6	
	Overall % CV	1.8	3.1[c]	2.2	1.6	2.1	6.1[c]	2.6	3.3	4.5	1.7	1.1	

[a]Mean C_T calculated from Universal Internal Control
[b]Number of positive samples
[c]Average and %CV based on number of positive samples
[d]Does not include intermediate samples as those are at a concentration that is not reproducible
[e]Performed study using the bioMérieux NucliSENS easyMAG
[f]Performed study using the Roche MagNA Pure

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
10903 New Hampshire Avenue
Document Mail Center – WO66-0609
Silver Spring, MD 20993-0002

Gen-Probe Prodesse, Inc.
c/o Emily Ziegler
Research Associate III
W229 N1870 Westwood Dr.
Waukesha, WI 53186

DEC - 3 2010

Re: K102952

Trade/Device Name:	ProAdeno™+
Regulation Number:	21 CFR §866.3980
Regulation Name:	Respiratory viral panel multiplex nucleic acid assay
Regulatory Class:	Class II
Product Code:	OCC
Dated:	October 4, 2010
Received:	October 5, 2010

Dear Ms. Ziegler:

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 class II (Special Controls), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. 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 Parts 801 and 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); and 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 advice for your device on our labeling regulation (21 CFR Parts 801 and 809), please contact the Office of *In Vitro* Diagnostic Device Evaluation and Safety at (301) 796-5450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

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 (301) 796-7100 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Sally A. Hojvat, M.Sc., Ph.D.
Director
Division of Microbiology Devices
Office of *In Vitro* Diagnostic Device Evaluation and Safety
Center for Devices and Radiological Health

Enclosure

Indications for Use

DEC - 3 2010

510(k) Number (if known): K102952

Device Name: ProAdeno™+ Assay

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Negative results do not preclude HAdV infection and should not be used as the sole basis for treatment or other patient management decisions.

Prescription Use ___X___ (21 CFR Part 801 Subpart D) And/Or Over the Counter Use ____. (21 CFR Part 801 Subpart C)

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

Concurrence of CDRH, Office of In Vitro Diagnostic Device Evaluation and Safety (OIVD)

Division Sign-Off
Office of In Vitro Diagnostic Device
Evaluation and Safety

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