VR11T

Catalog No. PA2300
November, 2023

PK CMV-PA SYSTEM

Passive Particle Agglutination Test for Detection
of Total Cytomegalovirus Antibodies using Beckman Coulter PK Systems

I. INTENDED USE

The PK CMV-PA System is a passive particle agglutination assay intended for the qualitative detection of IgG and IgM antibodies to cytomegalovirus (CMV) in human EDTA plasma and serum from blood donors using the Beckman Coulter PK7300 and/or PK7400 Automated Microplate Systems. This test is not intended for diagnostic use.

II. SUMMARY OF TEST

Cytomegalovirus (CMV) is a double-stranded DNA virus with physicochemical characteristics common to members of the herpesvirus family.[1] Serologic surveys have shown that CMV infection is worldwide in distribution, with antibody prevalence in adults in the range of 20-82%.[2-4,18] The majority of CMV infections are subclinical or associated with nonspecific illness. The virus may remain in a latent state indefinitely following initial infection, or it may emerge from time to time to cause an active infection.[5] Pregnant women can transmit the CMV virus to the fetus, resulting in congenital liver, spleen, and/or CNS disease in the unborn child.[6] The congenital effects of mother-to-fetus CMV transmission may be more severe in those cases where the mother has acquired the primary infection during early pregnancy than in maternal cases of reactivated disease.[7] CMV infection often induces life-threatening conditions such as pneumonia, fever, and hepatitis among immunosuppressed patients such as organ transplant recipients and in patients harboring human immunodeficiency virus (HIV).[8,9]

The transfusion or transplant of CMV-seropositive blood or organs may cause a variety of clinical abnormalities in immunocompromised recipients. Since CMV infections are frequently transmitted through organ transplants and blood transfusions,[2,4,10-12] the screening of blood donors for CMV antibodies is an important step toward reducing cytomegalovirus infection in immunocompromised transfusion and transplant recipients.

A variety of methods have been developed to detect antibodies to CMV including indirect hemagglutination assay (IHA), indirect fluorescent assay (IFA), anticomplement immunofluorescence (ACIF), enzyme immunoassay (EIA), or passive latex agglutination (PLA).

In 1951 Boyden[13] succeeded in attaching a variety of protein antigens to the surfaces of tannic acid-treated sheep erythrocytes and demonstrated hemagglutination in the presence of the corresponding antibodies. Variations of these methods are still widely used today despite problems associated with biological carriers. To address these problems, artificial carriers have been developed as substitutes for erythrocytes and are now being used in immune agglutination assays for the detection of antibodies to various infectious diseases.[14-17]

Automation has enhanced the value of the indirect particle agglutination test by significantly reducing the amount of time and labor needed to perform the assay. The PK CMV-PA System has been developed to provide an indirect particle agglutination (IPA) assay using uniform reagents which are stable, easy to handle, and suitable for use on the BECKMAN COULTER PK7300 and/or PK7400 Automated Microplate Systems.

III. PRINCIPLE OF PROCEDURE

The PK CMV-PA System uses gelatin particles coated with cytomegalovirus antigens to detect IgG and IgM antibodies to CMV in human serum and plasma. The test sample or control material is diluted with SAMPLE DILUENT and then mixed with the sensitized particles in a terraced microplate well. During the incubation, the particles settle in the terraced microplate well. *Antibody to CMV* will bind to the antigen-sensitized particles during this incubation. Particles with bound antibody will form agglutination, which are visible as a homogeneous blue layer of gelatin particles. When antibodies to CMV are not present, sensitization and subsequent agglutination does not occur. Particles without bound antibody fall freely to the center of the well and visually appear as a compact dense blue button surrounded by a clear zone.

The PK7300 and/or PK7400 instrument will read the settling patterns of particles in each well based on the threshold settings chosen for the reagent. The PK7300 and/or PK7400 determines the presence or absence of antibodies to CMV using a CCD (charged coupled device) camera, which captures the well image allowing differentiation of agglutinated and unagglutinated patterns.

IV.REAGENTS

The PK CMV-PA System is available in a kit sufficient to perform 2500 tests. Store reagents at 2-8°C. **DO NOT FREEZE.**

SENSITIZED PARTICLES - 10 vials containing gelatin particles colored with blue dye, sensitized with cytomegalovirus antigens and then lyophilized. Each vial must be reconstituted with 6.0 mL RECONSTITUTING SOLUTION. Reconstituted particles contain 0.15% sodium azide. Each vial is sufficient for 250 tests on the PK7300 and on the PK7400.

RECONSTITUTING SOLUTION -1 bottle, 70 mL. Phosphate buffered saline containing 0.10% sodium azide. For the reconstitution of SENSITIZED PARTICLES.

SAMPLE DILUENT - 3 bottles, 300 mL each. Proprietary solution containing phosphate buffered saline, normal rabbit serum and 0.10% sodium azide.

V. WARNING AND PRECAUTIONS

PK CMV-PA System is for in vitro diagnostic use.

1) Avoid contamination of reagents or specimens with saliva which can cause indistinguishable agglutination patterns. Do not mouth pipette any reagents.
2) The microplates must be clean and in good condition before use. Damaged plate terraces or improper washing of the microplates resulting in protein buildup or debris in the terraces can adversely affect test results. For instance, the homogenous layer of agglutinated particles in a positive reaction can be disrupted and fold over onto itself. An analogy would be the folding over of the sides of an omelet. This phenomenon can result from excessive vibration, protein buildup in the terraces of the microplate or physical damage to the microplate terraces, and is readily apparent during plate review. The recommended microplate maintenance procedures can be found in the Beckman Coulter PK7300 User's Guide and the PK7400 Instructions for Use.
3) If positive control samples repeatedly test negative, excessive instrument vibration is a potential cause. When control material repeatedly fails to perform as expected, contact Beckman Coulter Immunohematology Technical Services at 800-447-5852.
4) Avoid freezing of PK CMV-PA reagents and reconstituted SENSITIZED PARTICLES.
5) Sodium azide is added to the reagents as a bacteriostatic agent. Sodium azide has been reported to form explosive lead and copper azides in laboratory plumbing. To prevent azide build-up, flush with large volumes of water if solutions containing azide are disposed of in the sink.
6) Visible signs of microbial growth or gross turbidity in the reagent may indicate degradation and warrant discontinuance of use.
7) Handle all specimens, human-based reagents and controls as if potentially infectious. Refer to the Center for Disease Control guidelines for handling biological materials.[17]
8) Do not eat, drink or smoke in areas where specimens, human-based reagents and controls are handled.
9) Clean pipettes should be used to reconstitute all reagents. Clean glass or plastic containers should be used for pooling reagents from the same lot.
10) Positive and negative control materials should be handled in the same fashion as donor samples.
11) Inadequate adherence to the package insert can result in erroneous results.
12) Carryover between samples has been detected in some donor samples with high titers of CMV antibodies. The PK7300 and PK7400 require the use of Cleaning Solution (no preparation required) in the Cleaning Solution Tank, which eliminates carry-over in most cases.

VI. REAGENT PREPARATION

1) Reconstitute, as needed, each vial of SENSITIZED PARTICLES with 6 mL of RECONSTITUTING SOLUTION. Replace the stopper and invert a few times to assure thorough mixing. Prior to use, allow the reagent to reconstitute for 3-10 hours at room temperature (15-30°C).

Note: The reagent reconstitution time has been updated from a minimum of 30 minutes to 3-10 hours.

2) Reconstituted particles are stable for 7 days at 2-8°C.
3) The date of reconstitution and the reconstituted expiry should be recorded on the reagent log.
4) After the reconstitution period, gently swirl (DO NOT VORTEX) the reagent to assure thorough resuspension. Place the reconstituted well mixed sensitized particles into a clean dry PK reagent vial. Place the PK vial into the PK reagent tray and place the tray in the analyzer. Initiate mixing on the PK7300 or PK7400 to keep the sensitized particles mixed. See the PK7300 User's Guide or PK7400 Instructions for Use for reagent placement and mixing instructions.
5) SENSITIZED PARTICLES from the same lot number may be pooled following completion of the reconstitution period. The mixture is stable for 7 days from the earliest reconstitution date of the particles contained in the mixture.
6) SENSITIZED PARTICLES from one lot number should not be mixed with those of another lot number.
7) The SAMPLE DILUENT AND RECONSTITUTING SOLUTION are not matrixed to the SENSITIZED PARTICLES lot.

Note: All reagents should be brought to room temperature (15-30°C) before reconstitution and use.

VII. STORAGE

Note: Reagents should not be used after the expiration date.

1) Unused particle suspension should be returned to the original vial, using aseptic technique.
2) Store the PK CMV-PA System at 2-8°C. DO NOT FREEZE.
3) The PK CMV-PA System should not be used after the expiration date which is printed on the outside of the package.
4) Store reconstituted SENSITIZED PARTICLES at 2-8°C. DO NOT FREEZE. SENSITIZED PARTICLES are stable for 7 days after reconstitution, when stored at 2-8°C.
5) Visible signs of microbial growth or gross turbidity in the reagents may indicate degradation and warrant discontinuance of use.

VIII. SPECIMEN COLLECTION AND PREPARATION

Plasma (EDTA) and serum samples, obtained through standard collection procedures are suitable for this assay. The performance of this assay has not been established with plasma samples employing heparin as the anticoagulant, serum samples collected with serum separator tubes, heat-treated samples, or neonatal samples. In addition, the performance of this assay has not been established with cadaveric samples, pleural fluid, saliva, or nonhuman samples.

Prior to analysis on the PK7300 and/or PK7400, samples should be adequately centrifuged to ensure that the plasma or serum is free from particulate matter. If erythrocytes or other visible components are contained in the sample, remove by centrifugation to prevent interference with the test results. The PK7300 User's Guide and/or the PK7400 Instructions for Use requires centrifugation of samples within 10 hours of analysis and centrifugation for a minimum of 10 minutes at 1000 x g. These requirements exist for the purpose of optimizing red cell sampling. Therefore, plasma or serum samples tested do not need to comply with these requirements as long as the plasma or serum is free from particulate material. Samples exhibiting gross lipemia, hemolysis or icterus may be compromised and may require alternative testing.

EDTA specimens may be tested up to 5 days after collection on the PK7300 and on the PK7400. Sample integrity is best maintained when stored at 2-8°C. However, plasma and serum may be kept at room temperature (15-30°C) for up to 3 days after collection. Serum specimens may be tested up to 14 days after collection when stored at 2-8°C. Serum samples may be stored frozen at<-20°C if testing is to exceed 14 days after collection. Samples should be well mixed after thawing. Repeated freeze/thaw cycles should be avoided. Improper storage of specimens may result in variable settling patterns yielding false positive or indeterminate results.

When shipping specimens, they should be packaged in compliance with applicable federal, state and local regulations covering the transport of clinical specimens and etiologic agents. Specimens may be shipped at either ambient, refrigerated (2-8°C) on wet ice, or frozen (-10°C or colder) on dry ice.

IX. MATERIALS

MATERIALS PROVIDED IN THE PK CMV-PA SYSTEM
-RECONSTITUTING SOLUTION
-SENSITIZED PARTICLES
-SAMPLE DILUENT

MATERIALS REQUIRED BUT NOT PROVIDED:
-Beckman Coulter microplates with a 5 µm well terraces
-Pipetting device capable of delivering 6.0 mL
-BECKMAN COULTER PK7300 and/or
BECKMAN COULTER PK7400
-PK CMV-PA System Controls

X. DIRECTIONS FOR USE

The PK Instruments are programmable instruments whose operation is controlled by software. Parameters validated by the manufacturer are incorporated into the operating files. The user may define panel (test) configurations. Please consult Section D of the PK7300 User's Guide or Chapter 3 of the PK7400 Instructions for Use.

Test parameters and recommended thresholds for the PK7300 and the PK7400 have been established based upon application development with characterized samples. Working files for the PK CMV-PA test are shown below for the PK7300 and PK7400. Good laboratory practice dictates that each laboratory validate the operating parameters.

All reagents, diluents, and specimens should be at room temperature (15-30°C) prior to analysis.

Threshold Settings for the PK7300 and PK7400

	P/C		SPC		LIA		LIA Selection	BG/C
	(+) Limit	(-) Limit	Low	High	(+) Limit	(-) Limit		
PK7300	35	20	14	14	200	90	5	Middle
PK7400	33	19	18	18	200	90	5	Middle

Dynamic Range Settings for the PK7300 and PK7400

	P		C		LIA		SPC	
	Low	High	Low	High	Low	High	Low	High
PK7300	50	99	10	99	0	450	N/A	N/A
PK7400	61	90	0	90	0	600	0	46

PK7300 PARAMETERS

	VOLUME/SETTING
Sample/Diluent Ratio	8.9
Diluted Sample Volume	25 µL
Reagent Volume	23 µL
Reagent Name	CMV
Channel Designation	(11-12)
Threshold Setting	Positive/ Negative
Temperature Setting	28°C
Incubation Time	60 minutes
Plate Well	5 µm

PK7400 PARAMETERS

	VOLUME/SETTING
Sample/Diluent Ratio	8.9
Diluted Sample Volume	25 µL
Reagent Volume	23 µL
Reagent Name	CMV
Channel Designation	(11-12)
Threshold Setting	Positive/ Negative
Temperature Setting	30°C
Incubation Time	60 minutes
Plate Well	5 µm

NOTE: CHANGES MADE TO THE PK7300 and/or PK7400 ARE AUTOMATICALLY SAVED TO THE HARD DRIVE WHEN THEY ARE MADE. IT IS RECOMMENDED THAT WHEN ANY CHANGES ARE MADE, THEY ALSO BE SAVED TO AN EXTERNAL STORAGE MEDIA.

XI. QUALITY CONTROL

The PK CMV-PA System REACTIVE and NONREACTIVE CONTROLS should be tested at the beginning and end of each batch of samples assayed, after the addition of reagents and after interruption or delays in processing.

Refer to the PK CMV-PA System Controls package insert for complete details regarding this material. Additional quality control testing may be performed by the user including other well- characterized specimens or referenced sera.

Perform testing as described in the PK7300 User's Guide or the PK7400 Instructions for Use using the reactive and nonreactive controls as specimens. The reactive control should produce a positive reaction and the negative control should produce a negative reaction with the test. If appropriate results are not obtained with the controls, all assay results within that batch are invalid and must be retested. Repeat testing making sure that the volume of the controls is sufficient for adequate instrument sampling (> 1.5 mL). When control material repeatedly fails to perform as expected, contact Beckman Coulter Immunohematology Technical Services at 800-447-5852.

XII. INTERPRETATION

The PK7300 and PK7400 will interpret the settling patterns of particles in each well based on the threshold settings chosen in the parameter file. See the PK7300 User's Guide or the PK7400 Instructions for Use, for complete details of the analyzer's interpretation of reactions.

The PK7300 and PK7400 stores the reaction patterns on the hard drive and plate review may be performed either manually (within 30 minutes) or on-line (no time limit). Visually, a reactive test is a homogenous layer of particles. A nonreactive test would result in a compact, dense button surrounded by a clear zone. Plate review should include inspection of the reactions for abnormal settling patterns or for any sample for which visual and analyzer interpretations do not agree. Under certain circumstances, this homogenous layer of particles can be disrupted and fold over onto itself. An analogy would be the folding over of the sides of an omelet. This phenomenon can result from excessive vibration, protein buildup in the terraces of the microplate or physical damage to the microplate terraces, and is readily apparent during plate review. The recommended microplate maintenance procedures can be found in the PK7300 User's Guide or the PK7400 Instructions for Use.

A complete description of plate inspection and results review is contained in Section C of the PK7300 User's Guide or Chapter 2 of the PK7400 Instructions for Use. Additional testing must be performed on any samples for which visual and analyzer interpretations do not agree. Refer to Section C of the PK7300 User's Guide or Chapter 2 of the PK7400 Instructions for Use.

The presence or absence of antibody to cytomegalovirus is determined by the PK7300 and/or PK7400 using a CCD camera which analyzes the well image and differentiates agglutinated and unagglutinated patterns. The PK7300 and/or PK7400 employs three assessment parameters for each microplate well containing PK CMV-PA System reagent and test specimen:

- SPC Sharpness of the edge of the button
- LIA Quantity of particles in the center of the well
- P/C Ratio of the average light transmittance of the peripheral and central values

The parameters SPC, LIA and P/ C are compared to programmable thresholds to obtain an interpretation (+,-?) for each reaction.

The most important parameter resulting from the image analysis system is SPC. If the SPC is determined positive, then either a positive or indeterminate LIA or P/C value will result in an overall positive result interpretation for the reaction. A positive SPC value together with a negative value for either the LIA or P/C will cause the channel result to be indeterminate. If the SPC is determined negative, then either a negative or indeterminate LIA or P/C value will result in an overall negative result interpretation for the reaction. A negative SPC value together with a positive value for either the LIA or P/C will cause the channel result to be indeterminate.

XIII. INTERPRETATIONS OF RESULTS

A sample reported as nonreactive (-) on initial screening is considered negative for antibodies to CMV, indicating that the individual has not been infected with cytomegalovirus.

A sample reported as positive (+) on initial screening is considered reactive for antibodies to CMV by the criteria of the PK CMV-PA System. The presence of antibodies indicates previous or current infection. Individuals with antibodies to CMV are potentially at risk of transmitting CMV infection, but are not necessarily contagious.

A sample reported as indeterminate (?) on initial screening may be considered reactive by the criteria of the PK CMV-PA System, may be repeated in duplicate on the PK analyzer or tested by an alternative method.

If an initially indeterminate sample is repeated in duplicate using the PK CMV-PA System, the duplicate tests must occur in the same run. If either duplicate is reactive or indeterminate, the specimen is to be interpreted as repeatedly reactive for antibodies to CMV by the criteria of the PK CMV-PA System. If upon repeat testing both duplicate results are nonreactive, the sample should be considered negative for antibodies to CMV by the criteria of the PK CMV- PA System.

Only those samples which test negative on initial screening or in both duplicate retests should be considered negative for antibodies to CMV for purposes of transfusion.

XIV. LIMITATIONS OF THE PROCEDURE

The PK CMV-PA System is used to detect circulating antibodies to cytomegalovirus. It has been shown to be safe and effective for the large scale screening of blood donors when used in accordance with instructions provided. Donors in the earliest stages of infection may not contain detectable levels of CMV antibody. The PK CMV-PA System is not intended to distinguish between chronic and acute CMV infections.

This product is only for use in screening blood donors and has not been evaluated as a diagnostic test for CMV outside the blood bank setting.

XV. EXPECTED RESULTS

Several studies have shown the expected incidence of CMV antibodies in various populations. In a recent study of 250 random blood donors, 50% were positive for CMV antibodies.[2] This study supports earlier studies showing CMV antibody prevalence ranging from 20-82%.[2-4,18] Expected values may vary with age, sex and geographic location. The performance characteristics of the PK CMV-PA System in blood donors were evaluated in two sites on the PK7300. Evaluation of 2020 blood donor samples demonstrate CMV seropositivity of 43.3%, 50.7%, for Sites 1 and 2, respectively.

XVI. SPECIFIC PERFORMANCE CHARACTERISTICS

PK7300

The performance of the PK CMV-PA System was evaluated on the PK7300 by comparing to the PK7200 reference results. Testing was performed at two geographically distinct blood centers and also at a Beckman Coulter facility. A total of 2983 serum samples and 7394 plasma (EDTA) samples were tested. Results are summarized in Table 1.

Reproducibility

The reproducibility of the PK CMV-PA System on the PK7300 was evaluated by testing a subset, 1154 plasma samples, of the total samples tested in the study. Included in the subset were 27 known reactive and 4 known non-reactive samples. All samples were tested on days 1-3, 4 and 6. Results are summarized in Tables 2 and 3.

Clinical Specificity

The PK CMV-PA System was tested with a cohort of 7 CMV negative samples on the PK7300 from individuals demonstrating reactivity for antinuclear antibodies, rheumatoid factor and Lyme's disease. All samples tested negative as expected with no evidence of interference or cross reactivity.

Sensitivity and Specificity

Sensitivity and Specificity for the PK CMV-PA System when tested on the PK7300 was determined by comparing the 2983 serum samples and the 7394 plasma samples from field trial testing to the "true" result obtained on the PK7200. Discordant samples were tested by two other methods (EIA and Capture-CMV). Best two out of three results was considered the "true" result after additional testing. Results are summarized in Tables 4 and 5.

PK7400

The performance of the PK CMV-PA System was evaluated on the PK7400 by comparing to the PK7300 reference results. Testing was performed at three geographically distinct blood centers. A total of 3372 serum samples and 3689 plasma (EDTA) samples were tested. Results are summarized in Tables 6 and 7.

Reproducibility

The reproducibility of the PK CMV-PA System on the PK7400 was evaluated at three sites using three lots (one lot per site) by testing 12 plasma and serum samples. Out of the 12 samples, 6 were known reactive and 6 known non-reactive samples. All samples were tested in duplicate, in two different runs per testing day (at least 2 hours apart), over a minimum of 5 nonconsecutive days. Results are summarized in Tables 8 and 9.

Sensitivity and Specificity

Sensitivity and Specificity for the PK CMV-PA System when tested on the PK7400 was determined by comparing the 3372 serum samples and the 3689 plasma samples from

method comparison testing to the "true" result obtained on the PK7300. Discordant samples were tested by two other methods (DiaSorin LIAISON assay and Immucor Capture-CMV).

TABLE 1. INITIAL AND REPEAT CMV RESULTS WITH PLASMA AND SERUM

PK-CMV-PA System		PLASMA		SERUM	
PK7200	PK7300	Initial	Repeat	Initial	Repeat
Neg	Neg	3340	3365	1455	1462
Neg	Pos	19	2	1	0
Pos	Neg	15	1	11	2
Pos	Pos	4020	4026	1516	1519
Totals		7394	7394	2983	2983
% CONCORDANCE		99.50%	99.9%	99.6%	99.9%

TABLE 2. RATE OF AGREEMENT FOR SAMPLE AGE SUBSET ON THE PK7300

Test Day	Number In Agreement	Rate of Agreement (%)	Lower 95% confidence bound
Initial	1143/1154	99.05%	98.43%
Day 4	1144/1154	99.13%	98.53%
Day 6	1146/1154	99.31%	98.75%

TABLE 3. REPRODUCIBILITY OF THE PK CMV-PA SYSTEM ON THE PK7300

	N =	DAY 1-3	DAY 4	DAY 6
Known Reactive	81	81	76	81
Known Non-Reactive	12	11*	11*	11*

* 1 sample tested false positive on day 1-3 and 6.

TABLE 4. SENSITIVITY OF THE PK CMV-PA SYSTEM ON THE PK7300

Sample Type	Correct Result Positive	Incorrect Negative Result	Sensitivity	Sensitivity % (95% lower Conf. Bound)
Serum	1517	4	1517/1521 99.74%	99.40%
EDTA Plasma	4026	0	4026/4026 100.0%	99.93%

TABLE 5. SPECIFICITY OF THE PK CMV-PA SYSTEM ON THE PK7300

Sample Type	Correct Result Negative	Incorrect Positive Result	Specificity	Specificity % (95% lower Conf. Bound)
Serum	1462	0	1462/1462 100.0%	99.80%
EDTA Plasma	3355	13	3355/3368 99.61%	99.39%

TABLE 6. REFERENCE METHOD (PK7300) COMPARISON TO PK7400 - PLASMA: ALL LOTS/SITES

All Sites/Lots	Trial PK7400			Statistical Summary				
Reference PK7300	R	NR	Total		Agreement	Total	Rate of Agreement (%)	Lower 95% confidence bound
R	1690	2	1692	PPA	1690	1692	99.88%	99.57%
NR	6	1991	1997	NPA	1991	1997	99.70%	99.35%
Total	1696	1993	3689	OPA	3681	3689	99.78%	99.57%

TABLE 7. REFERENCE METHOD (PK7300) COMPARISON TO PK7400 - SERUM: ALL LOTS/SITES

All Sites/Lots	Trial PK7400			Statistical Summary				
Reference PK7300	R	NR	Total		Agreement	Total	Rate of Agreement (%)	Lower 95% confidence bound
R	1485	0	1485	PPA	1485	1485	100.00%	99.75%
NR	2	1885	1887	NPA	1885	1887	99.89%	99.62%
Total	1487	1885	3372	OPA	3370	3372	99.94%	99.79%

TABLE 8. REPRODUCIBILITY OF THE PK CMV-PA SYSTEM ON THE PK7400 FOR ALL LOTS/SITES

Sample ID	Expected Result	# Correct Result		% Correct Result
		Channel 11	Channel 12	
2400016401	Pos	30/30	30/30	100%
2400016402	Pos	30/30	30/30	100%
2600016403	Pos	30/30	30/30	100%
2600016404	Pos	30/30	30/30	100%
9245209	Neg	30/30	30/30	100%
2400016406	Pos	30/30	30/30	100%
1034559900	Neg	30/30	30/30	100%
1034550100	Neg	30/30	30/30	100%
1034559400	Neg	30/30	30/30	100%
1034550500	Neg	30/30	30/30	100%
1034551000	Neg	30/30	30/30	100%
1034549600	Pos	30/30	30/30	100%

TABLE 9. REPEATABILITY OF THE PK CMV-PA SYSTEM ON THE PK7400 FOR ALL LOTS/SITES

Sample ID	Expected Result	# Correct Result		% Correct Result
		Channel 11	Channel 12	
2400016401	Pos	15/15	15/15	100%
2400016402	Pos	15/15	15/15	100%
2600016403	Pos	15/15	15/15	100%
2600016404	Pos	15/15	15/15	100%
9245209	Neg	15/15	15/15	100%
2400016406	Pos	15/15	15/15	100%
1034559900	Neg	15/15	15/15	100%
1034550100	Neg	15/15	15/15	100%
1034559400	Neg	15/15	15/15	100%
1034550500	Neg	15/15	15/15	100%
1034551000	Neg	15/15	15/15	100%
1034549600	Pos	15/15	15/15	100%

TABLE 10. SENSITIVITY OF THE PK CMV-PA SYSTEM ON THE PK7300

Sample Type	True Result Positive	Incorrect Negative Result	Sensitivity	Lower 95% confidence bound
EDTA Plasma	1690	0	1690/1690 100.0%	99.78%
Serum	1485	1	1485/1486 99.93%	99.63%

TABLE 11. SPECIFICITY OF THE PK CMV-PA SYSTEM ON THE PK7300

Sample Type	True Result Negative	Incorrect Positive Result	Specificity	Lower 95% confidence bound
EDTA Plasma	1997	2	1997/1999 99.90%	99.64%
Serum	1886	0	1886/1886 100.0%	99.80%

TABLE 12. SENSITIVITY OF THE PK CMV-PA SYSTEM ON THE PK7400

Sample Type	True Result Positive	Incorrect Negative Result	Sensitivity	Lower 95% confidence bound
EDTA Plasma	1690	0	1690/1690 100.0%	99.78%
Serum	1486	0	1486/1486 100.0%	99.75%

TABLE 13. SPECIFICITY OF THE PK CMV-PA SYSTEM ON THE PK7400

Sample Type	True Result Negative	Incorrect Positive Result	Specificity	Lower 95% confidence bound
EDTA Plasma	1993	6	1993/1999 99.70%	99.35%
Serum	1885	1	1885/1886 99.95%	99.70%

XVII. REFERENCES

1. Griffiths PD, Grundy JE. Molecular biology and immunology of cytomegalovirus. Biochem. J. 1987; 241:313-324.
2. Perham TGM, Caul EO, Conway PJ, Mott MG. Cytomegalovirus infection in blood donors - a prospective study. Brit. J. Haem. 1971; 20:307-320.
3. Prince AM, Szmuness W, Millian SJ, David DS. A serologic study of cytomegalovirus infections associated with blood transfusions. N. Engl. J. Med. 1971; 284:1125-1131.
4. Pass MA et al. Evaluation of a walking donor blood transfusion program in an intensive care nursery. J. Pediat. 1976;89: 646-651.
5. Drew WL. Cytomegalovirus: an overview. Syva. Monitor. 1988;6(2):1-5.
6. Yeager AS. Transfusion-acquired cytomegalovirus infections in newborn infants. Am. J. Dis. Child. 1974;128: 478-483.
7. Stagno S et al. Congenital cytomegalovirus infection: the relative importance of primary and recurrent maternal infection. N. Engl. J. Med. 1982; 306:945-949.
8. Ho M. Viral infections after transplantation in man. Arch. Virol. 1977; 55:1-24.
9. Glenn J. Cytomegalovirus infections following renal transplantation. Rev. Inf. Dis. 1981; 3:1151.
10. Beebe JL. Cytomegalovirus: disease and diagnosis. Lab Management 1978; 16:15-18.
11. Yeager AS et al. Prevention of transfusion-acquired cytomegalovirus infections. Rev. Infect. Dis. 1983; 5:977-993.
12. Boyden SV. The adsorption of protein on erythrocytes treated with tannic acid and subsequent hemagglutination by antiprotein sera. J. Exp. Med. 1951; 193:107-120.
13. Kobayashi N et al. Establishment of the technology of a new specific diagnostic test for syphilis using Treponema antigen (MDA-TP). STD 1985; 66:61-73.
14. Deguchi M et al. Measurement of anti-Treponema pallidum antibodies using a new artificial carrier, high-density composit particles (HDP). Med and Pharm 1991; 26:333-339.
15. Yoshida T et al. Evaluation of passive particle agglutination test for antibody to human immunodeficiency virus. J. Clin Microbiol. 1987: 1433-1437.
16. US Department of Health and Human Services. Biosafety in microbiological laboratories. HHS Publication (NH) 21-1112, Washington US Government Printing office, December 2009.
17. Kilian CS. Prevalence of cytomegalovirus antibodies in blood donors. Lab medicine 1989; 8e:103-105.

MANUFACTURED BY:
Fujirebio Inc.
1-8-1 Akasaka, Minato-ku,
Tokyo 107-0052, Japan
+81-3-6279-0899

DISTRIBUTED BY:
BECKMAN COULTER, INC.
250 S. Kraemer Blvd.
Brea, CA 92821
Customer Service: 800-526-3821
Technical Support: 800-447-5852

Made in China