



**510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY AND INSTRUMENT**

I Background Information:

A 510(k) Number

K242095

B Applicant

Beckman Coulter Inc.

C Proprietary and Established Names

Access Toxo IgM II

D Regulatory Information

Product Code(s)	Classification	Regulation Section	Panel
LGD	Class II	21 CFR 866.3780 - Toxoplasma Gondii Serological Reagents	MI - Microbiology

II Submission/Device Overview:

A Purpose for Submission:

Clearance of new device

B Measurand:

IgM antibodies to *Toxoplasma gondii*

C Type of Test:

Chemiluminescent Immunoassay

III Intended Use/Indications for Use:

A Intended Use(s):

See Indications for Use below.

B Indication(s) for Use:

The Access Toxo IgM II assay is a paramagnetic-particle chemiluminescent immunoassay for the qualitative detection of *Toxoplasma gondii*-specific IgM antibody in adult human serum and plasma using the Access Immunoassay Systems.

The Access Toxo IgM II assay is presumptive for the diagnosis of acute, recent, or reactivated *Toxoplasma gondii* infection in males and pregnant or non-pregnant females. It is recommended this assay be performed in conjunction with a *Toxoplasma gondii*-specific IgG antibody assay.

Note: This assay has not been cleared/approved by the FDA for the screening of blood or plasma donors in the United States.

C Special Conditions for Use Statement(s):

Rx - For Prescription Use Only

Performance has not been established for the use of bodily fluids other than human serum or plasma.

D Special Instrument Requirements:

DxI 9000 Access Immunoassay Analyzer

IV Device/System Characteristics:

A Device Description:

The Access Toxo IgM II assay is a paramagnetic-particle chemiluminescent immunoassay for the qualitative detection of *Toxoplasma gondii*-specific IgM antibody in adult human serum and plasma using the Access Immunoassay Systems.

The Access Toxo IgM II assay consists of the reagent pack, calibrators, and quality controls (QCs), packaged separately. Other items needed to run the assay include substrate and wash buffer.

B Principle of Operation:

The Access Toxo IgM II assay is an immunoenzymatic assay and uses the immunocapture principle. The sample to be tested is added to a reaction vessel with paramagnetic particles coated with human IgM-specific sheep polyclonal antibody as capture antibody. After incubation in a reaction vessel, materials bound to the solid phase are held in a magnetic field while unbound materials are washed away. Then a complex formed with *T. gondii* antigen and *T.*

gondii (P30)-specific monoclonal antibody that has been labeled with alkaline phosphatase is added to the reaction vessel. After a second incubation and a second washing, the chemiluminescent substrate is added to the vessel and light generated by the reaction is measured with a luminometer. The photon production is a function of the amount of enzyme conjugate present at the end of the reaction. The light quantity measured for a sample allows a determination of the presence of *T. gondii*-specific IgM antibody, by comparison with a cut-off value defined during the assay calibration on the instrument. If the light production is equal or greater than the cut-off value, the sample is considered reactive in the Access Toxo IgM II assay.

The cutoff for non-reactivity is 0.8 S/CO and reactivity is 1.00 S/CO. Results between 0.8 – 1.0 S/CO (equivocal zone) should be confirmed by testing a new sample 10 to 20 days later. The Access Toxo IgM II assay results interpretation is presented in **Table 1**.

Table 1: Access Toxo IgM II Results Interpretation

Readout in S/CO	Interpretation
S/CO < 0.8	Non-Reactive
$0.8 \leq \text{S/CO} < 1.0$	Equivocal
S/CO ≥ 1.0	Reactive

V Substantial Equivalence Information:

A Predicate Device Name(s):

Access Toxo IgM II Assay

B Predicate 510(k) Number(s):

K003259

C Comparison with Predicate(s):

Device & Predicate Device(s):	<u>K242095</u> Candidate Device	<u>K003259</u> Predicate
Device Trade Name	Same	Access Toxo IgM II
General Device Characteristic Similarities		
Intended Use/Indications for Use	Same	<p>The Access Toxo IgM II assay is a paramagnetic-particle chemiluminescent immunoassay for the qualitative detection of <i>Toxoplasma gondii</i>-specific IgM antibody in adult human serum and plasma using the Access Immunoassay Systems.</p> <p>The Access Toxo IgM II assay is presumptive for the diagnosis of acute,</p>

Device & Predicate Device(s):	<u>K242095</u> Candidate Device	<u>K003259</u> Predicate
		recent, or reactivated <i>Toxoplasma gondii</i> infection in males and pregnant or non-pregnant females. It is recommended this assay be performed in conjunction with a <i>Toxoplasma gondii</i> -specific IgG antibody assay. Note: This assay has not been cleared/approved by the FDA for the screening of blood or plasma donors in the United States.
Analyte	Same	IgM antibody to <i>T. gondii</i>
Technology	Same	2-step (sandwich) chemiluminescence immunoassay
Format	Same	Chemiluminescent
Method	Same	Automated
Calibration	Same	Utilizes a stored calibration curve
Calibration frequency	Same	28 days
Sample Type	Same	Serum and plasma
Results Interpretation	S/CO < 0.8 Non-Reactive 0.8 ≤ S.CO < 1.0 Equivocal S/CO ≥ 1.0 Reactive	S/CO < 1.0 Non-Reactive 0.8 ≤ S.CO < 1.0 Grey Zone S/CO ≥ 1.0 Reactive
Capture Antibody	Same	Anti-human IgM antibody (sheep)
Detection Antibody	Same	Inactivated <i>T. gondii</i> Ag - <i>T. gondii</i> (P30)-specific mouse monoclonal antibody conjugated to alkaline phosphatase (bovine) complex
Stability	Same	28 days after opening, 2-10°C
General Device Characteristic Differences		
Substrate	Lumi-Phos PRO substrate	Access Substrate
Instrument	DxI 9000 Access Immunoassay Analyzer	Access Immunoassay System

VI Standards/Guidance Documents Referenced:

The following Clinical and Laboratory Standards Institute (CLSI) guidelines were used:

- CLSI EP05-A3: Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline
- CLSI EP12-Ed 3: Evaluation of Qualitative Binary Output Examination Performance; Approved Guideline

VII Performance Characteristics (if/when applicable):

A Analytical Performance:

1. Precision/Reproducibility:

a) *Within-Laboratory Precision:* A 20-day within-laboratory precision study was conducted using 3 lots of the Access Toxo IgM II reagents, three lots of the Access Toxo IgM II calibrators and 3 DxI 9000 Access Immunoassay Analyzer systems. Four human serum samples were tested in 2 replicates at 2 runs per day over 20 days using 3 reagent lot/calibrator lot combinations, where a unique reagent lot and calibrator lot are paired. The data were analyzed for repeatability (within-run), between-run, between-day, and within-laboratory precision. Within-laboratory precision data summary is shown in **Table 2**.

Table 2: Access Toxo IgM II Within-Laboratory Precision

Sample	N	Mean (S/CO)	Within-Run (Repeatability)		Between-Run		Between-Day		Between -Lot and Instrument ^a		Overall Precision ^b	
			SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Sample 1	240	0.14	0.004	2.8	0.005	3.6	0.003	1.9	0.006	4.7	0.009	6.8
Sample 2	240	1.03	0.040	3.9	0.024	2.3	0.010	0.9	0.038	3.7	0.061	5.9
Sample 3	240	5.58	0.151	2.7	0.083	1.5	0.160	2.9	0.230	4.1	0.329	5.9
Sample 4	240	8.76	0.207	2.4	0.169	1.9	0.213	2.4	0.368	4.2	0.502	5.7

^a Access Toxo IgM II reagent lot, Access Toxo IgM II calibrator lot and DxI 9000 instruments are confounded, and the confounding effect is represented by between-lot and instrument.

^b Overall within-laboratory variability includes within-run, between-run, between-day, and between-lot variance components.

b) *Reproducibility (between-Instrument Precision):* An additional precision study was conducted over 5-day by testing four serum samples on 3 DxI 9000 Access Immunoassay Analyzers in an internal site. The samples were tested with 3 lots of Access Toxo IgM II reagents, and 1 lot of Access Toxo IgM II calibrator on each instrument with 5 replicates per run and 1 run per day over 5 days. Between-instrument reproducibility data is shown in **Table 3**.

Table 3: Access Toxo IgM II Assay Reproducibility (Between-Instrument Precision)

Sample	N	Mean (S/CO)	Within-Run (Repeatability)		Between- Day/Runs ^a		Between Instrument		Between Reagent lot		Reproducibility ^b	
			SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Sample 1	225	0.14	0.004	3.2	0.005	4.0	0.004	2.8	0.005	3.5	0.009	6.8
Sample 2	225	1.10	0.034	3.1	0.044	4.0	0.008	0.7	0.015	1.4	0.057	5.3
Sample 3	225	4.83	0.117	2.4	0.154	3.2	0.000	0.004	0.047	1.0	0.199	4.1
Sample 4	225	9.26	0.210	2.3	0.316	3.4	0.081	0.9	0.170	1.8	0.410	4.6

^a Days and runs are confounded.

^b Reproducibility includes within-run, between-run, between-day, and between-lot variance components.

c) Reproducibility (between-site precision): Refer to K002453 and K031506.

2. Linearity:

Not applicable

3. Analytical Specificity/Interference:

Refer to K002453.

4. Assay Reportable Range:

Not applicable

5. Traceability, Stability, Expected Values (Controls, Calibrators, or Methods):

Not applicable

6. Detection Limit:

Not applicable

7. Assay Cut-Off:

Refer to K002453.

8. Carry-Over:

Not applicable

B Comparison Studies:

1. Comparison of Access Toxo IgM II assay on the Access 2 Immunoassay Analyzer to the DxI 9000 systems:

A method comparison study was conducted to compare the performance of the Access Toxo IgM II assay on DxI 9000 Access Immunoassay Analyzer to the Access Toxo IgM II assay on the Access 2 Immunoassay System. A total of 152 native serum samples were tested. Positive percent agreement (PPA) and negative percent agreement (NPA) between the DxI 9000 Immunoassay Analyzer and the Access 2 Immunoassay system was calculated for the Access Toxo IgM II assay and shown in **Table 4**.

Table 4: Performance Agreement of Access Toxo IgM II assay on the Access 2 Immunoassay Analyzer to the DxI 9000 System (n=152)

Access Toxo IgM II		Access 2 Immunoassay Analyzer			
		Reactive	Grey Zone	Non-reactive	Total
DxI 9000 System	Reactive	41	0	0	41
	Equivocal	0	4	0	4
	Non-Reactive	0	0	107	107
	Total	41	4	107	152
Positive Percent Agreement (PPA)		100.00% (41/41)	95% CI ^a = 91.43% to 100.00%		
Negative Percent Agreement (NPA)		100.00% (107/107)	95% CI ^a = 96.53% to 100.00%		

^a95% CI for PPA and NPA were estimated using the Wilson score method.

2. Matrix Comparison:

Refer to K003259.

C Clinical Studies:

1. Clinical Sensitivity:
Not applicable
2. Clinical Specificity:
Not applicable

3. Other Clinical Supportive Data (When 1. and 2. Are Not Applicable):

For clinical agreement study refer to K002453.

D Clinical Cut-Off:

Not applicable

E Expected Values/Reference Range:

Not applicable

VIII Proposed Labeling:

The labeling supports the finding of substantial equivalence for this device.

IX Conclusion:

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