510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY ONLY

I Background Information:

A 510(k) Number

K232904

B Applicant

Beckman Coulter

C Proprietary and Established Names

Access Ostase

D Regulatory Information

Product Code(s)	Classification	Regulation Section	Panel
CIN	Class II	21 CFR 862.1050 - Alkaline Phosphatase Or Isoenzymes Test System	CH - Clinical Chemistry

II Submission/Device Overview:

A Purpose for Submission:

Modified device

B Measurand:

Bone alkaline phosphatase

C Type of Test:

Quantitative immunoassay

III Intended Use/Indications for Use:

A Intended Use(s):

See Indications for Use below.

B Indication(s) for Use:

The Access Ostase assay is a paramagnetic particle, chemiluminescent immunoassay for use with the Access Immunoassay Systems for the quantitative measurement of bone alkaline phosphatase (BAP), an indicator of osteoblastic activity, in human serum and plasma. This device is intended to be used as an aid in the management of postmenopausal osteoporosis and Paget's disease.

C Special Conditions for Use Statement(s):

Rx - For Prescription Use Only

For in vitro diagnostic use

D Special Instrument Requirements:

DxI 9000 Access Immunoassay Analyzer

IV Device/System Characteristics:

A Device Description:

The chemiluminescent substrate was modified on the Access Ostase assay from the Access Substrate to the Lumi-Phos PRO substrate.

The Access Ostase reagent pack consists of two specific reagents, R1a, and R1b. A summary description of the reagents is provided below:

Well	Contents	Ingredients
R1a:	3.25 mL	Paramagnetic particles coated with goat anti-mouse polyclonal antibody suspended in TRIS-buffered saline, with surfactant, bovine serum albumin (BSA), protein (goat), < 0.1% sodium azide, and 0.1% ProClin 300.
R1b:	1.2 mL	Anti-BAP mouse monoclonal antibody diluted in TRIS-buffered saline, with surfactant, BSA, < 0.1% sodium azide, and 0.1% ProClin 300.

Materials needed but not supplied with the reagent kit include the Access Ostase assay Calibrators, Quality Control (QC) materials, Lumi-Phos PRO, UniCel DxI Wash Buffer II, and Sample Diluent.

B Principle of Operation:

The Access Ostase assay is a one-step sandwich immunoenzymatic assay. A mouse monoclonal antibody specific to BAP is added to a reaction vessel with paramagnetic particles coated with goat anti-mouse polyclonal antibody. 30 µL of calibrators, controls, or samples containing BAP are added to the coated particles, and bind to the anti-BAP monoclonal antibody.

After incubation, materials bound to the solid phase are held in a magnetic field while unbound materials are washed away. Then, the chemiluminescent substrate is added to the vessel and light

generated by the reaction is measured with a luminometer. The light production is directly proportional to the concentration of analyte in the sample. Analyte concentration is automatically determined from a stored calibration.

V Substantial Equivalence Information:

A Predicate Device Name(s):
Access Ostase Assay

B Predicate 510(k) Number(s):
K994278

C Comparison with Predicate(s):

Device & Predicate Device(s):	K232904	K994278
Device Trade Name	Access Ostase	Access Ostase
General Device Characteristic Similarities		
Intended Use/Indications For Use	The device is intended for the quantitative measurement of bone alkaline phosphatase (BAP) as an aid in the management of postmenopausal osteoporosis and Paget's disease.	Same
Analyte Measured	Bone alkaline phosphatase (BAP)	Same
Technology	One-step immunoenzymatic assay	Same
General Device Characteristic Differences		
Measuring Range	0.3-120 µg/L	0.1-120 µg/L
Instrument	DxI 9000 Access Immunoassay Analyzer	Access Immunoassay system
Substrate	Lumi-Phos PRO Substrate	Access Substrate

VI Standards/Guidance Documents Referenced:

Clinical & Laboratory Standards Institute (CLSI) EP05-A3: Evaluation of Precision Performance of Quantitative Measurement Methods
CLSI EP06-2nd Edition: Evaluation of the Linearity of Quantitative Measurement Procedures

CLSI EP17-A2: Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures
CLSI EP09c-3rd Edition: Measurement Procedure Comparison and Bias Estimation Using Patient Samples

VII Performance Characteristics (if/when applicable):

A Analytical Performance:

1. Precision/Reproducibility:

Studies were performed to determine the imprecision of the candidate device using a protocol based on the CLSI EP05-A3 guideline.

The study was run on three DxI 9000 Access Immunoassay Analyzers using three reagent lots, and three calibrator lots. Pooled serum samples were tested in duplicates across two runs per day, over 20 days. Within-run (repeatability), between run, between day, and within-lab (total) precision results for a representative reagent lot on a single instrument are summarized below:

Concentration (µg/L)			Repeatability (Within-run)		Between-Run		Between-Day		Within-lab (Total)	
Sample	**N**	**Mean**	**SD**	**% CV**	**SD**	**% CV**	**SD**	**% CV**	**SD**	**% CV**
Sample 1	80	1.8	0.1	4.6	0.01	0.8	0.0001	0.0	0.1	4.7
Sample 2	80	9.1	0.3	3.3	0.2	2.0	0.2	1.7	0.4	4.1
Sample 3	80	25	0.8	3.3	0.6	2.3	0.5	1.8	1.1	4.4
Sample 4	80	38	1.4	3.6	0.8	2.1	0.4	1.0	1.6	4.3
Sample 5	80	98	3.2	3.3	2.3	2.4	0.9	0.9	4.1	4.2

2. Linearity:

Studies were performed using serum samples across the assay measuring range to evaluate the linearity of the Access Ostase assay on the DxI 9000 Access Immunoassay Analyzer in accordance with the CLSI EP06-2nd Edition guideline. The data was analyzed using a weighted linear regression model.
The results of these linearity studies support that the Access Ostase assay is linear on the DxI 9000 Access Immunoassay Analyzer throughout the proposed measuring range of 0.3-120 µg/L.

3. Analytical Specificity/Interference:

Interference was reviewed in K994278.

4. Assay Reportable Range:

See Linearity section VII A.2 above.

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

Traceability was reviewed in K994278.

6. Detection Limit:

Studies were performed to determine the Limit of Blank (LoB), Limit of Detection (LoD), and Limit of Quantitation (LoQ) using protocols based on the CLSI EP17-A2 guideline. The LoB was determined to be 0.003 µg/L. The LoD was determined to be 0.007 µg/L. The LoQ was determined to be 0.3 µg/L based on a 20% CV performance goal.

7. Assay Cut-Off:

Not applicable.

B Comparison Studies:

1. Method Comparison with Predicate Device:

A method comparison study was conducted comparing the candidate device to the predicate device using a protocol based on the CLSI EP09c-A3 guideline. A total of one hundred and sixty-three (163) serum samples (153 were individual native serum, and 10 samples were native serum spiked with BAP) were evaluated in the method comparison study.

The study was run on three DxI 9000 instruments and three Access 2 instruments with three reagent pack lots and three calibrator lots.

The comparison between paired measurements was analyzed by fitting the observed Access Ostase Assay on the DxI 9000 instrument (dependent variable, y) into a Passing-Bablok regression model, with the observed Access Ostase Assay on Access 2 values as the only independent variable (x, predicate). The results are shown below:

N	Concentration Range* (µg/L)	Slope (95 % CI)	Intercept (95% CI)	Correlation Coefficient (R)
163	0.34 – 108	0.95 (0.93, 0.98)	0.53 (0.32,0.75)	1.00

*Range is Access 2 values

2. Matrix Comparison:

Matrix comparison studies for serum and plasma (sodium heparin and lithium heparin) were reviewed in K994278.

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):

Not applicable.

D Clinical Cut-Off:

Not applicable.

E Expected Values/Reference Range:

The 'Expected values' are the same as claimed in K994278:

	N	BAP Mean (µg/L)	SD	BAP Median (µg/L)	BAP 95th Percentile (µg/L)
Males	217	12.3	4.3	11.6	20.1
Premenopausal Females	228	8.7	2.9	8.5	14.3
Postmenopausal Females	529	13.2	4.7	12.5	22.4

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.