



Food and Drug Administration  
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BECKMAN COULTER, INC.  
RYAN SEVERSON  
SENIOR REGULATORY AFFAIRS ANALYST  
1000 LAKE HAZELTINE DR.  
CHASKA MN 55318-1084

December 19, 2014

Re: K142362

Trade/Device Name: Access 25(OH) Vitamin D Total for use on the Unicel DxI  
Immunoassay System  
Access 25(OH) Vitamin D Total Calibrators for use on the UniCel DxI  
Immunoassay System

Regulation Number: 21 CFR 862.1825

Regulation Name: Vitamin D test system

Regulatory Class: II

Product Code: MRG, JIT

Dated: November 13, 2014

Received: November 14, 2014

Dear Mr. Ryan Severson:

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. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to 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 Parts 801 and 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the

electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulations (21 CFR Parts 801 and 809), please contact the Division of Industry and Consumer Education at its toll-free number (800) 638 2041 or (301) 796-7100 or at its Internet address <http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>. 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 Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address <http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>.

Sincerely yours,

  
**Katherine Serrano -S**

For : Courtney H. Lias, Ph.D.  
Director  
Division of Chemistry and Toxicology Devices  
Office of In Vitro Diagnostics  
and Radiological Health  
Center for Devices and Radiological Health

Enclosure

## Indications for Use

510(k) Number (if known)  
K142362

### Device Name

Access 25(OH) Vitamin D Total for use on the UniCel DxI Immunoassay Systems.  
Access 25(OH) Vitamin D Total Calibrators for use on the UniCel DxI Immunoassay Systems.

### Indications for Use (Describe)

The Access 25(OH) Vitamin D Total assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of total 25-hydroxyvitamin D [25(OH) vitamin D] levels in human serum and plasma using the UniCel DxI Immunoassay Systems. Results are to be used as an aid in the assessment of vitamin D sufficiency.

The Access 25(OH) Vitamin D Total Calibrators are intended to calibrate the Access 25(OH) Vitamin D Total assay for the quantitative determination of total 25-hydroxyvitamin D [25(OH) vitamin D] levels in human serum and plasma using the UniCel DxI Immunoassay Systems.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

### CONTINUE ON A SEPARATE PAGE IF NEEDED.

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## **Administrative Section 3.2: 510(k) Summary**

### **510(k) Summary**

Prepared August 22, 2014

This summary of 510(k) safety and effectiveness is being submitted in accordance with the requirements of 21 CFR 807.92.

The Assigned 510(k) Number is: k142362

#### **Submitted By:**

Ryan Severson  
Senior Regulatory Affairs Analyst  
Beckman Coulter Inc.  
1000 Lake Hazeltine Dr.  
Chaska, MN, 55318  
Phone: (952) 368-7899  
Fax: (952) 368-7610  
Email: [rmseverson@beckman.com](mailto:rmseverson@beckman.com)

#### **Device Name**

Proprietary/Trade Name: Access 25(OH) Vitamin D Total for use on the UniCel DxI Immunoassay System.  
Common Name: 25(OH) Vitamin D  
Classification Name: Vitamin D Test System  
Classification Regulation: 21 CFR 862.1825  
Product Code: MRG

Proprietary/Trade Name: Access 25(OH) Vitamin D Total Calibrators for use on the UniCel DxI Immunoassay System.  
Common Name: 25(OH) Vitamin D Calibrators  
Classification Name: Calibrator, Secondary  
Classification Regulation: 21 CFR 862.1150  
Product Code: JIT

#### **Predicate Device**

DiaSorin LIAISON 25 OH Vitamin D Total Assay (K112725).  
DiaSorin LIAISON 25 OH Vitamin D Total Calibrators (K112725)  
Manufactured by Diasorin, Inc.

## **Device Description**

The Access 25(OH) Vitamin D Total for use on the UniCel DxI Immunoassay System, The Access 25(OH) Vitamin D Total Calibrators for use on the UniCel DxI Immunoassay System, and the UniCel DxI Immunoassay analyzer comprise the Access Immunoassay System for the quantitative determination of total 25-hydroxyvitamin D [25(OH) vitamin D] levels in human serum and plasma.

The Access 25(OH) Vitamin D Total assay is a two-step sequential competitive binding immunoenzymatic assay. In the initial incubation, sample is added to a reaction vessel with a vitamin D binding protein (DBP) releasing agent and paramagnetic particles coated with sheep monoclonal anti-25(OH) vitamin D antibody. 25(OH) vitamin D is released from DBP and binds to the immobilized monoclonal anti-25(OH) vitamin D on the solid phase. Subsequently, a 25(OH) vitamin D analogue-alkaline phosphatase conjugate is added which competes for binding to the immobilized monoclonal anti-25(OH) vitamin D. After a second incubation, materials bound to the solid phase are held in a magnetic field while unbound materials are washed away. Then, the chemiluminescent substrate Lumi-Phos 530 is added to the vessel and light generated by the reaction is measured with a luminometer. The light production is inversely proportional to the concentration of 25(OH) vitamin D in the sample. The amount of analyte in the sample is determined from a stored, multi-point calibration curve.

## **Intended Use**

The Access 25(OH) Vitamin D Total assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of total 25-hydroxyvitamin D [25(OH) vitamin D] levels in human serum and plasma using the UniCel DxI Immunoassay Systems. Results are to be used as an aid in the assessment of vitamin D sufficiency.

The Access 25(OH) Vitamin D Total Calibrators are intended to calibrate the Access 25(OH) Vitamin D Total assay for the quantitative determination of total 25-hydroxyvitamin D [25(OH) vitamin D] levels in human serum and plasma using the UniCel DxI Immunoassay Systems.

### Comparison of Technological Characteristics

Parameter	Diasorin 25 OH Vitamin D Total.	Access 25(OH) Vitamin D Total
<b>Intended Use</b>	The LIAISON® 25 OH Vitamin D TOTAL Assay uses chemiluminescent immunoassay (CLIA) technology for the quantitative determination of 25-hydroxyvitamin D and other hydroxylated vitamin D metabolites in human serum, to be used in the assessment of vitamin D sufficiency using the LIAISON® Analyzer family. Assay results should be used in conjunction with other clinical or laboratory data to assist the clinician in making individual patient management decisions in an adult population.	The Access 25(OH) Vitamin D Total assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of total 25-hydroxyvitamin D [25(OH) vitamin D] levels in human serum and plasma using the UniCel DxI Immunoassay System. Results are to be used as an aid in the assessment of vitamin D sufficiency.
<b>Analyte Measurand</b>	25(OH) Vitamin D	25(OH) Vitamin D
<b>Standardization</b>	Standard prep: UV ε	NIST-Ghent ID-LC-MS/MS
<b>Technology</b>	Competitive Immunoassay	Competitive Immunoassay
<b>Format</b>	Chemiluminescent	Chemiluminescent
<b>Method</b>	Automated	Automated
<b>Calibration</b>	Utilizes a stored calibration curve.	Utilizes a stored calibration curve
<b>Sample Type</b>	Serum	Serum/Li Hep Plasma
<b>Measuring Range</b>	4-150 ng/mL	7.0-120 ng/mL (17.5 to 300 nmol/L).

## Summary of Studies

**Method Comparison:** A comparison of 25 (OH) Vitamin D concentrations from 278 samples, ranging from 7.32 ng/mL to 119.99 ng/mL was run on both the Access 25(OH) Vitamin D Total assay and the predicate DiaSorin LIAISON 25 OH Vitamin D Total. The new method was correlated with the predicate using Passing-Bablok analysis and the observed correlation coefficient was 0.88. A secondary comparison of 110 samples, ranging from 8.0 ng/mL to 98.6 ng/mL (20 nmol/L to 246.5 nmol/L), was completed on the Access 25(OH) Vitamin D Total assay and the 25(OH) Vitamin D ID LC-MS/MS Reference Measurement Procedure (RMP) from Ghent University (Ghent RMP). Analysis was completed using Passing Bablock, and the observed slope and correlation coefficient were 0.99 and 0.94 respectively.

**Imprecision:** This assay exhibits total imprecision  $\leq 10.0\%$  at concentrations greater than 15.0 ng/mL and Standard Deviation (SD)  $\leq 1.5$  ng/mL at concentrations  $\leq 15.0$  ng/mL. Representative studies demonstrated that the within-run % CV ranged from 2.1 to 4.7 %, the between-run % CV ranged from 3.3% to 8.1%, and the total % CV ranged from 4.2% to 9.3% for 25(OH) Vitamin D (25OHD) concentrations  $> 15.0$  ng/mL. The within-run SD ranged from 0.4 to 0.8 ng/mL, the between-run SD ranged from 0.6 to 1.2 ng/mL, and the total SD ranged from 0.7 to 1.3 ng/mL for 25OHD concentrations  $\leq 15.0$  ng/mL.

**Linearity:** The results indicate that the Access 25(OH) Vitamin D Total assay demonstrates linearity across the measuring range from 7.0 ng/mL ~ 120 ng/mL.

**Limit of Blank (LoB):** For the purposes of the assay Instructions for Use, the LOB will be 1.50 ng/mL. Representative data showed that the highest measurement result observed with no analyte present was determined to be 0.98 ng/mL.

**Limit of Detection (LoD):** For the purposes of the assay Instructions for Use, the LOD will be 2.00 ng/mL. Representative data showed that the lowest concentration of analyte in a sample that can be detected with a stated probability (95%) was determined to be 1.47 ng/mL.

**Limit of Quantitation (LoQ):** For the purposes of the assay Instructions for Use, the LOQ will be 7.0 ng/mL. Representative data showed that the lowest concentration in a sample that can be quantitatively determined with a % CV of 20% was determined to be 4.4 ng/mL.

**Analytical Specificity:** Normal human blood constituents and commonly encountered medications do not cause interference in the Access 25 (OH) Vitamin D Total Assay. Hemoglobin does not cause interference in the Access 25 (OH) Vitamin D Total Assay up to 0.5 g/L.

**Cross Reactivity:** Cross-reactants do not cause interference in the Access 25 (OH) Vitamin D Assay, with the exception of Paracalcitol. Cross reactivity studies indicate that falsely elevated results may occur in patients being treated with Paricalcitol.

**Population Observation Group:** This study measured 25(OH) vitamin D in serum samples from 367 apparently healthy male and female adults 21 years of age and older. The concentrations of 25(OH) vitamin D found in this population was from 11.5-84.5 ng/mL.

## Substantial Equivalence Comparison

Beckman Coulter believes the Access 25(OH) Vitamin D Total assay is substantially equivalent to the DiaSorin LIAISON 25 OH Vitamin D Total Assay (K112725). Tables 2 and 3 provide a summary of the pertinent similarities and differences between these two devices:

<b>Table 2: Substantial Equivalence Comparison - Similarities</b>		
<b>Characteristic</b>	<b><i>DiaSorin LIAISON 25 OH Vitamin D Total Assay (predicate, Calibrators Included)</i></b>	<b><i>Access 25(OH) Vitamin D Total for Use on the UniCel DxI Immunoassay System Reagent and Access 25(OH) Vitamin D Total Calibrators for Use on the UniCel DxI Immunoassay System.</i></b>
<b>Reagent</b>		
<b>510(k) Number(s)</b>	k112725	
<b>Intended Use</b>	The LIAISON® 25 OH Vitamin D TOTAL Assay uses chemiluminescent immunoassay (CLIA) technology for the quantitative determination of 25-hydroxyvitamin D and other hydroxylated vitamin D metabolites in human serum, to be used in the assessment of vitamin D sufficiency using the LIAISON® Analyzer family. Assay results should be used in conjunction with other clinical or laboratory data to assist the clinician in making individual patient management decisions in an adult population.	The Access 25(OH) Vitamin D Total assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of total 25-hydroxyvitamin D [25(OH) vitamin D] levels in human serum and plasma using the UniCel DxI Immunoassay Systems. Results are to be used as an aid in the assessment of vitamin D sufficiency.  The Access 25(OH) Vitamin D Total Calibrators are intended to calibrate the Access 25(OH) Vitamin D Total assay for the quantitative determination of total 25-hydroxyvitamin D [25(OH)D] levels in human serum and plasma using the UniCel DxI Immunoassay Systems.
<b>Format</b>	Chemiluminescent immunoassay	Same
<b>Method</b>	Automated	Same
<b>Product Type</b>	Reagent	Same
<b>Assay</b>	Calibrators	Same
<b>Components</b>	Reagent Pack	Same
<b>Calibration</b>	Utilizes a stored calibration curve	Same

<b>Table 2: Substantial Equivalence Comparison - Similarities</b>		
<b>Characteristic</b>	<i>DiaSorin LIAISON 25 OH Vitamin D Total Assay (predicate, Calibrators Included)</i>	<i>Access 25(OH) Vitamin D Total for Use on the UniCel DxI Immunoassay System Reagent and Access 25(OH) Vitamin D Total Calibrators for Use on the UniCel DxI Immunoassay System.</i>
<b>Reportable units</b>	ng/mL	ng/mL (nmol/L)
<b>Assay type</b>	Competition (direct); piggyback competition	2 Step Piggyback Competition assay
<b>Calibrators</b>		
<b>510(k) Number(s)</b>	k112725	
<b>Material</b>	Human Serum.	Same
<b>Method</b>	Automated	Same

The intended use, assay principal, test system, reagent pack configuration, assay method, assay type, and assay components of the subject device are equivalent to those of the predicate device.

**Table 3: Substantial Equivalence Comparison - Differences**

<b>Table 3: Substantial Equivalence Comparison - Differences</b>		
<b>Characteristic</b>	<i>DiaSorin LIAISON 25 OH Vitamin D Total Assay (predicate, Calibrators Included)</i>	<i>Access 25(OH) Vitamin D Total for Use on the UniCel DxI Immunoassay System Reagent and Access 25(OH) Vitamin D Total Calibrators for Use on the UniCel DxI Immunoassay System.</i>
<b>Reagent</b>		
<b>Sample Type</b>	Serum	Serum/Li Hep Plasma
<b>Immunoassay instrument</b>	DiaSorin LIAISON	UniCel DxI Immunoassay System
<b>Capture Antibody</b>	Polyclonal Goat Aby (anti 25 OH Vit D)	Sheep monoclonal anti-25(OH) vitamin D
<b>Sample Volume (µL)</b>	250 for first run (25 for additional runs)	30
<b>Analytical Measuring Range (ng/mL)</b>	4-150	7.0 -120
<b>Standardization</b>	Standard prep: UV ε	NIST-Ghent ID-LC-MS/MS
<b>Calibrators</b>		
<b>Calibrator Levels</b>	2	6
<b>Calibrator Materials</b>	25-OH-D Horse serum, phosphate, surfactants, NaN <sub>3</sub>	Human Serum with 25(OH) vitamin D
<b>Calibrator Number</b>	2 cal levels (Low, high)	6 levels, zero and approximately 6, 17, 37, 87 and 210 ng/mL. (0, 15, 43, 93, 218 and 525 nmol/L))

## **Conclusion**

The information provided in the sections cited above demonstrates that the proposed new device, the Access 25(OH) Vitamin D Total assay has the same intended use as the predicate device. In addition, verification and validation testing, the clinical and analytical data, and other scientific information provided in this submission demonstrate that the Access 25(OH) Vitamin D Total assay on the UniCel DxI Immunoassay System is substantially equivalent to the predicate device. This information establishes the substantial equivalence of Beckman Coulter's product to the predicate device.