

**510(k) SUMMARY**

**JUL 28 2014**

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

The assigned 510(k) number is: **k141728**.

**510(k) holder/Submitter:** Sentinel CH. SpA

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**510(k) Summary Preparation Date:** 17<sup>th</sup> July 2014

**Proprietary Name:** ACE Calibrator  
**Common or Usual Name:** Angiotensin Converting Enzyme Calibrator  
**Classification:** Calibrator, Secondary (21 CFR 862.1150)  
Class II  
Clinical Chemistry  
JIT  
**Predicate Device:** Analytical Control Systems ACE Calibrator  
Product Code, SC-131  
Cleared under 510(k) – k930477

**Description of the Device:**

The ACE Calibrator is a single level, single analyte serum based calibrator. It consists of a lyophilized preparation of human serum containing angiotensin converting enzyme (porcine source), in a buffered human serum base with added preservatives and stabilizers.

The kit consists of six vials, containing 1 mL per vial. Once reconstituted, the calibrator is stable for 7 days when stored capped at 2-8°C.

**Statement of the Intended Use:**

ACE Calibrator is intended to be used with the Sentinel ACE Liquid Reagent for the preparation of the calibration curve for the kinetic determination of angiotensin converting enzyme (ACE) assay in human serum or plasma. The product is for *in-vitro* diagnostic use only.

**Summary of the technological characteristics of the device compared to the predicate device:**

The Sentinel ACE Calibrator is substantially equivalent to Analytical Control Systems (ACS) ACE Calibrator.

Table 1 summarizes the technological characteristics of the ACE Calibrator, illustrating the similarities and differences between the Sentinel ACE Calibrator and Analytical Control Systems ACE Calibrator (Predicate Device).

Table 1

Characteristic	Sentinel ACE Calibrator	ACS ACE Calibrator (Predicate)
<b>Similarities</b>		
Intended Use	Intended to be used with the Sentinel ACE Liquid Reagent for the preparation of the calibration curve for the kinetic determination of angiotensin converting enzyme (ACE) assay in human serum or plasma.	Intended to be used to prepare a reference curve for the kinetic determination of angiotensin converting enzyme (ACE) in human serum or plasma.
Format/Matrix	Lyophilized preparation of human serum containing ACE (porcine), preservatives and stabilisers.	Lyophilized preparation of human serum containing ACE (porcine), preservatives and stabilisers.
Preparation	Carefully peel the metal flip seal from the vial using tweezers or a spatula to assist.  Gently remove the stopper to avoid loss of the lyophilized pellet and add exactly 1.0 mL of deionized water. Replace stopper and gently swirl.  Leave to stand for 5 minutes. Swirl each vial just prior to use. Avoid foaming.	Add 1.0mL water to vial of ACE Calibrator. Swirl gently, allowing to stand for 5 minutes. Invert gently and mix well until dissolution is complete. Swirl gently to mix before each use.
Stability	<u>Lyophilized:</u> Stable at 2-8°C up to expiry date indicated on the package labelling. <u>Reconstituted material:</u> Stable 7 days when stored at 2-8°C, if contamination is avoided and vials are recapped immediately after use.	<u>Lyophilized:</u> Stable at 2-8°C until expiration date displayed on label. <u>Reconstituted material:</u> Stable for at least 7 days when stoppered and stored at 2-8°C.
Levels	Single Level	Single Level
Constituent Analyte(s)	Angiotensin Converting Enzyme (ACE)	Angiotensin Converting Enzyme (ACE)
<b>Differences</b>		
No significant differences identified		

**Summary of Performance Testing:****(1) Traceability**

The Sentinel ACE Calibrator was value assigned using an in-house protocol whereby proficiency survey material from the College of American Pathologists (CAP) ACE program, which has assigned values for the Trinity ACE reagent system, was used to assign a value to the Sentinel master calibrator. The value assignment involved running at least two runs per day over two days on two Abbott Architect analyzers using Sentinel ACE Liquid assay. Five replicates of pooled ACE calibrator were analyzed on each run to give a total of 20 replicates. The assigned value was the mean of the 20 replicates.

The assigned value was then verified by running commercially available control sera for ACE as well as available ACE proficiency survey material from CAP and WEQAS (Wales External Quality Assurance Scheme).

Defined acceptance criteria was met for the value assignment and verification process.

No internationally recognised certified reference material or method is available for the measurement of ACE. As such the Sentinel ACE Calibrator targeted traceability to the Trinity Biotech ACE reagent system, which is considered to be a market leader in the determination of Angiotensin Converting Enzyme activity.

**(2) Stability****(i) Shelf-life Stability**

Real time stability data was presented on 2 different batches of ACE Calibrator. Accelerated heat stress testing was not performed on the calibrator as the angiotensin converting enzyme in the calibrator is heat labile and therefore not stable at elevated temperatures.

At time of manufacture, calibrator was reconstituted with 1 mL of deionised water and tested on a Cobas Mira, using Trinity Biotech ACE reagent. The calibrator recovery value represented the initial time result.

After 46 months (batch # 1) and 38 months (batch # 2) storage at 2-8°C as a lyophilized and capped fill, the Calibrator was re-tested after being reconstituted with deionised water and stored for 7 days at 2-8°C. The calibrator mean recovery result after 46 and 38 months respectively was compared against the initial time result (at time of manufacture) and % bias versus initial time result calculated.

The data demonstrates that the un-reconstituted calibrator when stored sealed at 2-8°C is stable for at least 38 months. Based on the shelf life data presented, the claimed shelf will be 36 months (3 years) from date of manufacture, which is the same shelf life as claimed by the predicate device.

(ii) Reconstituted Stability (Open vial)

3 vials of ACE Calibrator were reconstituted with 1 mL of deionised water as instructed on the package insert and pooled into a single vial. The pooled calibrator was then stored at 2-8°C for at least 7 days.

ACE Calibrator reconstituted for 7 days at 2-8°C was tested against freshly reconstituted ACE calibrator. Sentinel ACE Liquid assay was used for testing together with approved instrument application on the Abbott Architect analyzer. Freshly reconstituted calibrator was used to calibrate the ACE assay. ACS ACE Controls were run as Quality Control material. The calibrator and controls were run in triplicate.

In addition to 7 days, calibrator was also tested at day 2 and day 8 (stored at 2-8°C).

The recovery of the freshly reconstituted calibrator was compared to the recovery of calibrator stored for 7 days refrigerated at 2-8°C.

The results demonstrated that the ACE Calibrator met the acceptance criteria of within  $\pm 5.0\%$  difference in ACE recoveries between fresh calibrator and calibrator reconstituted and stored for 7 days at 2-8°C.

The reconstituted ACE Calibrator is stable and can be used for up to 7 days when stored capped and refrigerated at 2-8°C.

**Conclusion:**

The Sentinel ACE Calibrator and the Analytical Control Systems ACE Calibrator (predicate device) are substantially equivalent.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration  
10903 New Hampshire Avenue  
Document Control Center – WO66-G609  
Silver Spring, MD 20993-0002

July 28, 2014

SENTINEL CH. SPA  
PATRICIA DUPE  
REGULATORY AFFAIRS MANAGER  
VIA ROBERT KOCH, 2  
MILANO 20152 ITALY

Re: k141728

Trade/Device Name: ACE Calibrator  
Regulation Number: 21 CFR 862.1150  
Regulation Name: Calibrator  
Regulatory Class: II  
Product Code: JIT  
Dated: June 19, 2014  
Received: June 26, 2014

Dear Ms. Patricia Dupé:

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,

**Courtney H. Lias -S**

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)  
k141728

Device Name  
ACE Calibrator

Indications for Use (Describe)

The ACE Calibrator is a device intended to be used with the Sentinel ACE Liquid Reagent for the preparation of the calibration curve for the kinetic determination of angiotensin converting enzyme (ACE) assay in human serum or plasma. The product is for in vitro diagnostic use only.

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)

**PLEASE DO NOT WRITE BELOW THIS LINE – CONTINUE ON A SEPARATE PAGE IF NEEDED.**

**FOR FDA USE ONLY**

Concurrence of Center for Devices and Radiological Health (CDRH) (Signature)

**Yung W. Chan -S**

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