



Food and Drug Administration
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August 18, 2016

Re: k153651

Trade/Device Name: Access TSH (3rd IS) Assay and Access TSH (3rd IS) Calibrators on
the Access Immunoassay Systems

Regulation Number: 21 CFR 862.1690

Regulation Name: Thyroid stimulating hormone test system

Regulatory Class: II

Product Code: JLW, JIS

Dated: July 11, 2016

Received: July 13, 2016

Dear Mr. Lorenz:

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,


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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)

k153651

Device Name

Access TSH (3rd IS) Assay and Access TSH (3rd IS) Calibrators on the Access Immunoassay Systems

Indications for Use (Describe)

The Access TSH (3rd IS) assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access Immunoassay Systems. This assay is capable of providing 3rd generation TSH results.

The Access TSH (3rd IS) Calibrators are intended to calibrate the Access TSH (3rd IS) assay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access 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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Immunodiagnostic Development Center

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**510(k) Summary
k153651**

Date Prepared: December 15, 2015

Date Updated: July 11, 2016

Date Updated: August 17, 2016

This summary of 510(k) safety and effectiveness is being submitted in accordance with the requirements of 21 CFR 807.92(a)(1).

Submitter's Name and Address

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Device Name

Proprietary / Trade Name: Access TSH (3rd IS) Assay and Access
TSH (3rd IS) Calibrators on the Access
Immunoassay Systems

Common Name: Thyroid stimulating hormone assay

Classification Name: Thyroid stimulating hormone test system
(21 CFR 862.1690)
Secondary Calibrator (21CFR 862.1150)

Predicate Device

Access HYPERsensitive hTSH assay and Access HYPERsensitive
hTSH Calibrators

Manufactured by Beckman Coulter, Inc.

Device Description

The Access TSH (3rd IS) Assay (standardized to WHO 3rd International Standard, 81/565), Access TSH (3rd IS) Calibrators, and the Access Immunoassay analyzers comprise the Access Immunoassay System for the quantitative determination of thyroid-stimulating hormone (thyrotropin, TSH, hTSH) in human serum and plasma.

Intended Use

The Access TSH (3rd IS) assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access Immunoassay Systems. This assay is capable of providing 3rd generation TSH results.

The Access TSH (3rd IS) Calibrators are intended to calibrate the Access TSH (3rd IS) assay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access Immunoassay Systems.

Comparison of Technological Characteristics to the Predicate (Assay)

| Parameter | Access TSH (3 rd IS) Assay | Predicate Access HYPERsensitive hTSH Assay |
|-------------------------|---|---|
| Intended use | The Access TSH (3 rd IS) assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access Immunoassay Systems. This assay is capable of providing 3 rd generation TSH results. | The Access HYPERsensitive hTSH assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, hTSH) levels in human serum and plasma using the Access Immunoassay Systems. This assay is capable of providing 3 rd generation (HYPERsensitive hTSH(and/or 2 nd generation (Fast hTSH) results. |
| Analyte Measured | Human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) | Human thyroid-stimulating hormone (TSH, thyrotropin, hTSH) |
| Standardization | WHO 3 rd International Reference Preparation Thyroid Stimulating Hormone, Human (NIBSC Coded 81/565) | WHO 2 nd International Reference Preparation Thyroid Stimulating Hormone, Human (NIBSC Coded 80/558) |
| Technology | Sandwich immunoassay | Sandwich immunoassay |
| Format | Chemiluminescent | Chemiluminescent |
| Method | Automated | Automated |
| Calibration | Utilizes a stored calibration curve | Utilizes a stored calibration curve |
| Sample Type | Serum or plasma | Serum or plasma |
| Measuring Range | 0.01 – 50.0 μ IU/mL | 0.01 – 100 μ IU/mL |
| Stability | Stable at 2 to 10°C for 28 days after initial use | Stable at 2 to 10°C 28 days after initial use |

**Comparison of Technological Characteristics to the Predicate
(Calibrators)**

| Parameter | Access TSH (3rd IS) Calibrators | Predicate Access HYPERsensitive hTSH Calibrators |
|------------------------------------|---|--|
| Intended use | The Access TSH (3 rd IS) Calibrators are intended to calibrate the Access TSH (3 rd IS) assay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access Immunoassay Systems. | The Access HYPERsensitive hTSH Calibrators are intended to calibrate the Access TSH (3 rd IS) assay for the quantitative determination of human thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access Immunoassay Systems. |
| Standardization | WHO 3 rd International Reference Preparation Thyroid Stimulating Hormone, Human (NIBSC Coded 81/565) | WHO 2 nd International Reference Preparation Thyroid Stimulating Hormone, Human (NIBSC Coded 81/565) |
| Calibrator Levels | 6 levels (0 µIU/mL, and approximately 0.050, 0.30, 3.0, 15.0, and 50.0 µIU/mL) | 6 levels (0 µIU/mL, and approximately 0.1, 0.5, 4.0, 10.0, and 100.0 µIU/mL) |
| Calibrator Matrix | Bovine serum albumin | Bovine serum albumin |
| Calibration Curve Stability | 28 days | 28 Days |
| Stability | Vials are stable at 2 to 10°C for 90 days after initial use. | Vials are stable 2 to 10°C until expiration date stated on the label |

Summary of Studies

Method Comparison: A comparison of 155 serum samples with TSH concentrations ranging from approximately 0.010 to 50.0 $\mu\text{IU/mL}$ were run on both the Access TSH (3rd IS) assay and the predicate Access HYPERSensitive hTSH assay. The results were compared using Passing-Bablok regression and Pearson correlation with the predicate on the x-axis. The observed linear fit had a slope = 0.94 with 95% confidence interval of 0.92 to 0.97, an intercept = - 0.02 $\mu\text{IU/mL}$ and a correlation coefficient (r) = 0.99 and a slope specification 0.95 ± 0.10

Imprecision: Serum samples within-run imprecision ranged from 1.5 to 3.5 %CV, between-day imprecision ranged from 1.6 to 5.3 %CV, between-run imprecision ranged from 0.2 to 2.0 %CV, and total imprecision ranged from 3.1 to 6.3 %CV at all TSH concentrations. Serum samples within-run SD ranged from 0.0004 to 0.0007 $\mu\text{IU/mL}$, the between-day SD ranged from 0.0005 to 0.0012 $\mu\text{IU/mL}$, the between-run SD ranged from 0.0001 to 0.0004 $\mu\text{IU/mL}$, and the total SD ranged from 0.0008 to 0.0015 $\mu\text{IU/mL}$ at TSH concentrations $\leq 0.02 \mu\text{IU/mL}$. The TSH (3rd IS) assay exhibits total imprecision of less than or equal to 10% CV for concentrations greater than 0.02 $\mu\text{IU/mL}$ and ≤ 0.0029 SD at concentrations $\leq 0.02 \mu\text{IU/mL}$.

High-dose Hook Effect: The Access TSH (3rd IS) assay demonstrated no high-dose hook effect up to at least 1,000 $\mu\text{IU/mL}$ in a serum sample.

Linearity: The Access TSH (3rd IS) assay has demonstrated to be linear across the range of the assay (0.01 to approximately 50.0 $\mu\text{IU/mL}$) in serum samples.

Dilution Recovery: The Access TSH (3rd IS) assay has been demonstrated to dilute recover across the range of the assay (0.01 to approximately 50 $\mu\text{IU/mL}$) in serum samples. Samples containing hTSH concentrations from approximately 50 $\mu\text{IU/mL}$ to 500 $\mu\text{IU/mL}$ can be diluted 10-fold with an average recovery of $100 \pm 10\%$.

Limit of Blank (LoB): The highest measurement result observed with no analyte present in a serum sample is $< 0.005 \mu\text{IU/mL}$.

Limit of Detection (LoD): The lowest concentration of analyte in a serum sample that can be detected with a stated probability (95%) is $\leq 0.005 \mu\text{IU/mL}$.

Limit of Quantitation (LoQ): The lowest concentration of analyte in serum samples with between run imprecision of $\leq 10\%$ is $\leq 0.01 \mu\text{IU/mL}$.

Analytical Specificity: There is no significant interference from total protein, bilirubin, hemoglobin, or triglycerides in serum samples. Additionally, substances similar in structure to hTSH, when added to two individual patient serum samples with approximate hTSH concentrations of 0.3 $\mu\text{IU/mL}$ and 5.0 $\mu\text{IU/mL}$, showed no significant cross-reactivity.

Expected Reference Intervals: TSH concentrations were measured in human serum samples collected from apparently healthy, normal euthyroid male and non-pregnant female subjects and pregnant female populations, with approximately equal distribution across all three trimesters (as defined by the American Congress of Obstetricians and Gynecologists), using the Access TSH (3rd IS) assay in order to establish the central 97.5% reference interval (see table below).

| Population | Sample Size | Median (μIU/mL) | Range (μIU/mL) | 97.5% Reference Interval (μIU/mL) |
|---|-------------|-----------------|----------------|-----------------------------------|
| General Population (non-pregnant females and males) ages 21 and older | 367 | 1.48 | 0.32 - 7.08 | 0.45 - 5.33 |
| Pregnant females - 1st Trimester | 318 | 1.13 | 0.009 - 5.89 | 0.05 - 3.70 |
| Pregnant females - 2nd Trimester | 362 | 1.47 | 0.028 - 5.78 | 0.31 - 4.35 |
| Pregnant females - 3rd Trimester | 335 | 1.61 | 0.27 - 10.25 | 0.41 - 5.18 |

Matrix Comparison: A comparison of seventy-nine (79) matched sets of serum (gel and no gel) and plasma (lithium-heparin) samples with TSH concentrations ranging from approximately 0.01 to 50 μIU/mL were compared using Passing-Bablok regression. The observed linear fit for serum (no gel) vs. serum (gel) had an estimated slope = 1.00 with a 95% confidence interval (CI) of 0.98 to 1.02. The observed linear fit for plasma vs. serum (gel) had an estimated slope = 1.00 with a 95% CI of 0.98 to 1.01. The observed linear fit for plasma vs. serum (no gel) had an estimated slope of 1.00, with a 95% CI of 0.98 to 1.03.

Calibrators: The Access TSH (3rd IS) Calibrators are a six-level calibrator set intended to calibrate the Access TSH (3rd IS) assay for the quantitative determination of thyroid-stimulating hormone (thyrotropin, TSH, hTSH) levels in human serum and plasma using the Access Immunoassay Systems. The calibrator set provides calibrators at six levels – zero and approximately 0.050, 0.30, 3.0, 15.0, and 50.0 µIU/mL (mIU/L).

- Level S0; buffered bovine serum albumin matrix with surfactant, < 0.1% sodium azide, and 0.5% ProClin 300. Contains 0 µIU/mL (mIU/L) hTSH.
- Levels S1 – S5; approximately 0.05, 0.30, 3.0, 15.0, and 50.0 µIU/mL (mIU/L), respectively, in buffered BSA matrix with surfactant, < 0.1% sodium azide, and 0.5% ProClin 300.

The Access TSH (3rd IS) Calibrator kit contains one vial of each calibrator level are contained in 2.5 mL vials. The calibrator vials are intended for storage at 2-10°C.

Calibration cards are provided with each calibrator kit. Calibration cards contain bar codes that are encrypted with the individual calibrator concentrations for each calibrator level.

The Access TSH (3rd IS) Calibrators are standardized to the WHO 3rd International Reference Preparation Thyroid Stimulating Hormone, Human (NIBSC Coded 81/565).

Conclusion:

The Access TSH (3rd IS) Assay and Access TSH (3rd IS) Calibrators, for use on the Access Immunoassay Systems, are substantially equivalent to the predicate device, Access HYPERsensitive hTSH for the measurement of human TSH (thyrotropin, hTSH, TSH).