



May 23, 2019

CD Diagnostics Inc.  
Sujith Kallur  
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650 Naamans Road, Suite 100  
Claymont, Delaware 19703

Re: DEN180032

Trade/Device Name: Synovasure Alpha Defensin Lateral Flow Test Kit, Synovasure Alpha Defensin Lateral Flow Test Kit (5 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (10 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (30 Test), Synovasure Alpha Defensin Control Kit

Regulation Number: 21 CFR 866.3230

Regulation Name: Device to detect and measure non-microbial analytes to aid in the detection and identification of localized human infections

Regulatory Class: Class II

Product Code: QGN

Dated: June 28, 2018

Received: June 29, 2018

Dear Sujith Kallur:

The Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration (FDA) has completed its review of your De Novo request for classification of the Synovasure Alpha Defensin Lateral Flow Test Kit, Synovasure Alpha Defensin Lateral Flow Test Kit (5 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (10 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (30 Test), Synovasure Alpha Defensin Control Kit, a prescription device with the following indications for use:

The Synovasure Alpha Defensin Lateral Flow Test Kit is a qualitative visually read immunochromatographic assay for the detection of human host response proteins, Alpha Defensins 1-3, in the synovial fluid of adults with a total joint replacement who are being evaluated for revision surgery. The Synovasure Alpha Defensin Lateral Flow Test Kit results are intended to be used in conjunction with other clinical and diagnostic findings as an aid in the diagnosis of periprosthetic joint infection (PJI). The Synovasure Alpha Defensin Lateral Flow Test Kit is not intended to identify the etiology or severity of a PJI.

The Synovasure Alpha Defensin Control Kit is used in the Synovasure Alpha Defensin Lateral Flow Test Kit as assayed quality control samples to monitor performance and reliability of the Synovasure Alpha Defensin Lateral Flow Test Kit.

Although this letter refers to your product as a device, please be aware that some granted products may instead be combination products. If you have questions on whether your product is a combination product, contact [CDRHProductJurisdiction@fda.hhs.gov](mailto:CDRHProductJurisdiction@fda.hhs.gov). FDA concludes that this device should be classified into Class II. This order, therefore, classifies the Synovasure Alpha Defensin Lateral Flow Test Kit, Synovasure Alpha Defensin Lateral Flow Test Kit (5 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (10 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (30 Test), Synovasure Alpha Defensin Control Kit, and substantially equivalent devices of this generic type, into Class II under the generic name Device to detect and measure non-microbial analytes to aid in the detection and identification of localized human infections.

FDA identifies this generic type of device as:

**Device to detect and measure non-microbial analytes to aid in the detection and identification of localized human infections.** A device to detect and measure non-microbial analytes to aid in the detection and identification of localized human infections is identified as an *in vitro* device intended for the detection and qualitative measurement, quantitative measurement, or both of one or more non-microbial analytes in human clinical specimens to aid in the assessment, identification, or both of a localized microbial infection when used in conjunction with clinical signs and symptoms and other clinical and laboratory findings.

Section 513(f)(2) of the Food, Drug and Cosmetic Act (the FD&C Act) was amended by section 607 of the Food and Drug Administration Safety and Innovation Act (FDASIA) on July 9, 2012. This law provides two options for De Novo classification. First, any person who receives a "not substantially equivalent" (NSE) determination in response to a 510(k) for a device that has not been previously classified under the Act may request FDA to make a risk-based classification of the device under section 513(a)(1) of the Act. On December 13, 2016, the 21st Century Cures Act removed a requirement that a De Novo request be submitted within 30 days of receiving an NSE determination. Alternatively, any person who determines that there is no legally marketed device upon which to base a determination of substantial equivalence may request FDA to make a risk-based classification of the device under section 513(a)(1) of the Act without first submitting a 510(k). FDA shall, within 120 days of receiving such a request, classify the device. This classification shall be the initial classification of the device. Within 30 days after the issuance of an order classifying the device, FDA must publish a notice in the Federal Register announcing the classification.

On June 29, 2018, FDA received your De Novo requesting classification of the Synovasure Alpha Defensin Lateral Flow Test Kit, Synovasure Alpha Defensin Lateral Flow Test Kit (5 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (10 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (30 Test), Synovasure Alpha Defensin Control Kit. The request was submitted under section 513(f)(2) of the FD&C Act. In order to classify the Synovasure Alpha Defensin Lateral Flow Test Kit, Synovasure Alpha Defensin Lateral Flow Test Kit (5 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (10 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (30 Test), Synovasure Alpha Defensin Control Kit into class I or II, it is necessary that the proposed class have sufficient regulatory controls to provide reasonable assurance of the safety and effectiveness of the device for its intended use. After review of the information submitted in the De Novo request, FDA has determined that, for the previously stated indications for use, the Synovasure Alpha Defensin Lateral Flow Test Kit, Synovasure Alpha Defensin Lateral Flow Test Kit (5 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (10 Test), Synovasure Alpha Defensin Lateral Flow Test Kit (30 Test), Synovasure Alpha Defensin Control Kit can be classified in class II with the establishment of special controls for class II. FDA believes that class II (special) controls provide reasonable assurance of the

safety and effectiveness of the device type. The identified risks and mitigation measures associated with the device type are summarized in the following table:

Identified Risks to Health	Mitigation Measures
Risk of false test results	Certain device descriptions, performance characteristics, results interpretation information, limitations, and study details in labeling. Certain device description information, demographic analysis, validation procedures, risk mitigation strategies and end user trainings, and studies. Collection device specification.
Failure to correctly interpret test results	Certain device descriptions, performance characteristics, results interpretation information, limitations, and study details in labeling. Certain demographic analysis, validation procedures, risk mitigation strategies and end user trainings, and studies.
Failure to correctly operate the device	Certain device descriptions, performance characteristics, results interpretation information, limitations, and study details in labeling. Certain demographic analysis, validation procedures, risk mitigation strategies and end user trainings, and studies. Collection device specification.

In combination with the general controls of the FD&C Act, the Device to detect and measure non-microbial analytes to aid in the detection and identification of localized human infections is subject to the following special controls:

Special Controls
<ol style="list-style-type: none"> <li data-bbox="185 1499 1325 1640">1. Any sample collection device used must be FDA-cleared, -approved, or -classified as 510(k) exempt (standalone or as part of a test system) for the collection of human specimens; alternatively, the sample collection device must be cleared in a premarket submission as a part of this device.</li> <li data-bbox="185 1682 1325 1892">2. The labeling required under 21 CFR 809.10(b) must include:               <ol style="list-style-type: none"> <li data-bbox="254 1751 1325 1892">i. An intended use with a detailed description of what the device detects and measures, the type of results provided to the user, the sample type, whether the measure is qualitative and/or quantitative, the clinical indications for the test use, and the specific population(s) for which the device is intended.</li> </ol> </li> </ol>

**Special Controls**

- ii. A detailed description of the performance characteristics of the device for all intended specimen types from the analytical and clinical studies (as applicable) required under paragraphs 3(ii) and 3(iii).
  - iii. A detailed explanation of the interpretation of results, including acceptance criteria for evaluating the validity of individual runs (e.g., assessment of internal and/or external quality controls, as applicable).
  - iv. The following limiting statements:
    - (A) A statement that a negative test result does not preclude the possibility of infection;
    - (B) A statement that the test results should be interpreted in conjunction with other clinical and laboratory data available to the clinician;
    - (C) A statement that consistent device performance is dependent on adequate specimen collection, transport, storage, and processing. Failure to observe proper procedures in any one of these steps can lead to incorrect results; and
    - (D) A statement that details any limitations associated with the samples, as appropriate (e.g., collected on the day of admission to the ICU).
3. Design verification and validation must include the following:
- i. A detailed device description, including as appropriate, all device parts; control elements incorporated into the test procedure; instrument requirements; reagents required but not provided; and the principle of device operation and test methodology, including all pre-analytical methods for the processing of specimens and the methodology from obtaining a sample to the result; design of primer/probe sequences; rationale for target analyte selection; and computational path from collected raw data to reported result (e.g., how collected raw signals are converted into a reported result).
  - ii. Detailed documentation of analytical studies including analytical sensitivity (Limit of Detection, Limit of Quantitation, and Limit of Blank), inclusivity, cross-reactivity, microbial interference, interfering substances, competitive inhibition, carryover/cross-contamination, specimen stability, within-lab precision, reproducibility, and linearity, as applicable.
  - iii. Detailed documentation and results either from: a clinical study, that includes prospective (sequentially collected) samples for each intended specimen type that are representative of the intended use populations and, when determined

**Special Controls**

- to be acceptable by FDA, additional characterized clinical samples; or, when determined to be acceptable by FDA, an equivalent sample set. The clinical study must compare the device performance to results obtained from an FDA-accepted reference method and/or FDA-accepted comparator method, as appropriate. Documentation from the clinical studies must include the clinical study protocol (e.g., the predefined statistical analysis plan), clinical study report, testing results, and results of all statistical analyses.
- iv. An evaluation of the level of the non-microbial analyte in asymptomatic patients with demographic characteristics (e.g., age, racial, ethnic, and gender distribution) similar to the intended use population of the device.
  - v. Documentation of an appropriate end user device training program that will be offered as part of efforts to mitigate the risks of false results, failure to correctly operate the device, and failure to correctly interpret test results.
  - vi. An appropriate risk mitigation strategy to ensure that the device does not prevent any other device(s) with which it is indicated for use, including incorporated device(s), from achieving their intended use (e.g., safety and effectiveness of the functions of the indicated device(s) remain unaffected).
  - vii. A detailed description of the impact of any software, including software applications and hardware-based devices that incorporate software, on the device's functions.

Section 510(m) of the FD&C Act provides that FDA may exempt a class II device from the premarket notification requirements under section 510(k) of the FD&C Act, if FDA determines that premarket notification is not necessary to provide reasonable assurance of the safety and effectiveness of the device type. FDA has determined premarket notification is necessary to provide reasonable assurance of the safety and effectiveness of the device type and, therefore, the device is not exempt from the premarket notification requirements of the FD&C Act. Thus, persons who intend to market this device type must submit a premarket notification containing information on the Device to detect and measure non-microbial analytes to aid in the detection and identification of localized human infections they intend to market prior to marketing the device.

Please be advised that FDA's decision to grant this De Novo request does not mean that FDA has made a determination that your device complies with other requirements of the FD&C Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the FD & C 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) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see <https://www.fda.gov/CombinationProducts/GuidanceRegulatoryInformation/ucm597488.htm>); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and if

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

A notice announcing this classification order will be published in the Federal Register. A copy of this order and supporting documentation are on file in the Dockets Management Branch (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852 and are available for inspection between 9 a.m. and 4 p.m., Monday through Friday.

As a result of this order, you may immediately market your device as described in the De Novo request, subject to the general control provisions of the FD&C Act and the special controls identified in this order.

For comprehensive regulatory information about medical devices and radiation-emitting products, please see Device Advice (<https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/>) and CDRH Learn (<http://www.fda.gov/Training/CDRHLearn>). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (<http://www.fda.gov/DICE>) for more information or contact DICE by email ([DICE@fda.hhs.gov](mailto:DICE@fda.hhs.gov)) or phone (1-800-638-2041 or 301-796-7100).

If you have any questions concerning the contents of the letter, please contact Bryan Grabias at 240-402-9563.

Sincerely,

Uwe Scherf, M.Sc., Ph.D.  
Director  
Division of Microbiology Devices  
OHT7: Office of In Vitro Diagnostics  
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