November 8, 2021

Tosoh Bioscience, Inc.
Louise Musante
Regulatory Compliance Consultant
6000 Shoreline Court, Suite 101
South San Francisco, CA 94080

Re: K211199
Trade/Device Name: ST AIA-PACK BNP Assay
Regulation Number: 21 CFR 862.1117
Regulation Name: B-Type Natriuretic Peptide Test System
Regulatory Class: Class II
Product Code: NBC
Dated: April 20, 2021
Received: April 22, 2021

Dear Louise Musante:

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. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. 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 Part 801 and Part 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/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); 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 Act); 21 CFR 1000-1050.

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 https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). 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 (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Kellie B. Kelm, Ph.D.
Director
Division of Chemistry
and Toxicology Devices
OHT7: Office of In Vitro Diagnostics
and Radiological Health
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 06/30/2023
See PRA Statement below.

510(k) Number *(if known)*

K211199

Device Name
ST AIA-PACK BNP Assay

Indications for Use *(Describe)*

The Tosoh ST AIA-PACK BNP assay is designed for IN VITRO DIAGNOSTIC USE ONLY for the quantitative measurement of BNP in human (K2EDTA) plasma on Tosoh AIA System Analyzers. BNP is used as an aid in the diagnosis of heart failure (HF) in patients presenting to the emergency department (ED) with clinical suspicion of new onset HF, acutely decompensated or exacerbated HF.

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.

This section applies only to requirements of the Paperwork Reduction Act of 1995.

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510(k) Summary
Tosoh Bioscience, Inc.'s
ST AIA-PACK BNP Assay

DATE PREPARED: April 20, 2021

1. **COMPANY NAME/CONTACT**

Tosoh Bioscience, Inc.
6000 Shoreline Court, Suite 101
South San Francisco, CA 94080

2. **CONTACT:**

Louise Musante
Regulatory Compliance Consultant
Email: louise.musante@tosoh.com
Cell Phone: (650) 242-5563

3. **DEVICE INFORMATION**

Device Trade Name: ST AIA-PACK BNP Assay
Regulation Number: 21 CFR Part 862.1117
Regulation Name: Test, Natriuretic Peptide
Product Code: NBC, B-Type natriuretic peptide test system
Device Class: Class II
510(k) Review Panel: Clinical Chemistry

Assigned Special 510(k) number: k211199

4. **PREDICATE DEVICE**

Trade name: ST AIA-PACK BNP Assay

510(k) submitter/holder: Tosoh Bioscience, Inc.
6000 Shoreline Court, Suite 101
South San Francisco, CA 94080

510(k) Number:

k192380

5. DEVICE DESCRIPTION

The ST AIA-PACK BNP is a two-site immunoenzymometric assay which is performed entirely in the ST AIA-PACK BNP test cups. BNP present in the test sample is bound with monoclonal antibody immobilized on magnetic beads and enzyme-labeled monoclonal antibody. The magnetic beads are washed to remove unbound enzyme-labeled monoclonal antibody and are then incubated with a fluorogenic substrate, 4-methylumbelliferyl phosphate (4MUP). The amount of enzyme-labeled monoclonal antibody that binds to the beads is directly proportional to the BNP concentration in the test sample. A standard curve is constructed, and unknown sample concentrations are calculated using the curve.

ST AIA-PACK BNP (Cat. No. 025228)

The ST AIA-PACK BNP set consists of 5 trays x 20 test cups. Each kit contains plastic test cups containing twelve magnetic lyophilized beads coated with anti-BNP mouse monoclonal antibody and 100 µL of anti-BNP mouse monoclonal antibody conjugated to alkaline phosphatase with sodium azide as a preservative.

Other Materials/Equipment Required (not Provided):

Tosoh AIA Analyzer 2000

AIA PACK

AIA-PACK Substrate Set II

AIA-PACK Substrate Reagent II

AIA-PACK Substrate Reconstituent II

AIA-PACK Wash Concentrate

AIA-PACK Diluent Concentrate

Sample Cups

AIA-PACK Detector Standardization Test Cups

AIA-PACK Sample Treatment Cups

Pipette Tips (1000/pkg)

Tip Rack (empty)

Preloaded Pipette Tips (96 tips x 50 racks)

Preloaded Pipette Tips (96 Tips x 5 Racks)

6. INDICATION FOR USE STATEMENT

The Tosoh ST AIA PACK BNP assay is designed for IN VITRO DIAGNOSTIC USE ONLY for the quantitative measurement of BNP in human (K2EDTA) plasma on Tosoh AIA System Analyzers. BNP is used as an aid in the diagnosis of heart failure (HF) in patients presenting to the emergency department (ED) with clinical suspicion of new onset HF, acutely decompensated or exacerbated HF.

7. INTENDED USE STATEMENTS:

(See above Indications For Use Statement).

The Tosoh ST AIA PACK BNP assay is intended for prescription use only, on Tosoh AIA Analyzer 2000.

8. REASON FOR SUBMISSION

This Special 510(k) is being filed to seek FDA clearance for the ST AIA-PACK BNP assay, a modified version of the existing ST AIA-PACK BNP assay, which is currently cleared (k192380, FDA cleared on August 24, 2020).

9. DESCRIPTION OF DEVICE MODIFICATION

The ST AIA-PACK BNP device is being modified to add a manual and automated dilution claim to the existing ST AIA-PACK BNP assay 510(k) clearance (k192380).This modification does not change the Intended Use/Indications for Use, the fundamental scientific technology, reagent formulation, assay configuration, manufacturing procedures, principle of operation, or safety and effectiveness of the device.

A summary of the modifications and the rationale for the changes between the current cleared Device: ST AIA-PACK BNP assay (k192380) and the ST AIA-PACK BNP assay with the dilution claims (modified device) are provided in Table 1 below.

Table 1 – Summary of Modifications to Subject Device Compared to Predicate Device

Cleared Device (k192380)	Candidate Device (Modification)	Rationale
No sample dilution claim	Addition of a 1:5 and 1:10 manual & automated dilution claim for the ST AIA-PACK BNP Assay	To allow a clinician to extend the measuring interval of the ST AIA-PACK BNP assay (above the analytical measurement interval of 2,000pg/mL) through specimen dilution, prepared both manually or onboard (automated) by the analyzer, for higher concentration BNP specimens.

10. SUBSTANTIAL EQUIVALENCE COMPARISON

The Tosoh ST AIA PACK BNP assay is substantially equivalent to the claimed predicate device; the Tosoh ST AIA PACK BNP (k192380), based on comparisons of the intended use and technological characteristics.

Table 2 – Comparison Table of Subject Device to Predicate Device

Attributes	ST AIA-PACK BNP Candidate	ST AIA-PACK BNP Predicate (k192380)	Differences	Differences raise any additional safety issues?
General Information				
Regulation #	21 CFR 862.1117	21 CFR 862.1117	Same	N/A
Regulation Name	B-type natriuretic peptide test system	B-type natriuretic peptide test system	Same	N/A
Regulatory Class	Class II	Class II	Same	N/A
Product Code	NBC	NBC	Same	N/A
Indications for Use	The Tosoh ST AIA PACK BNP assay is designed for IN VITRO DIAGNOSTIC USE ONLY for the quantitative measurement of BNP in human (K2EDTA) plasma on Tosoh AIA System Analyzers. BNP is used as an aid in the diagnosis of heart failure (HF) in patients presenting to the emergency department (ED) with clinical suspicion of new onset HF, acutely decompensated or exacerbated HF.	The Tosoh ST AIA PACK BNP assay is designed for IN VITRO DIAGNOSTIC USE ONLY for the quantitative measurement of BNP in human (K2EDTA) plasma on Tosoh AIA System Analyzers. BNP is used as an aid in the diagnosis of heart failure (HF) in patients presenting to the emergency department (ED) with clinical suspicion of new onset HF, acutely decompensated or exacerbated HF.	Same	N/A

Attributes	ST AIA-PACK BNP Candidate	ST AIA-PACK BNP Predicate (k192380)	Differences	Differences raise any additional safety issues?
Intended Use Setting	For use on patients presenting to the Emergency Department (ED).	For use on patients presenting to the Emergency Department (ED).	Same	N/A

Table 3 – Comparison Table of Technological Characteristics: Subject Device to Predicate Device

Attributes	ST AIA-PACK BNP Candidate	ST AIA-PACK BNP Predicate (k192380)	Differences	Differences raise any additional safety issues?
Product Specifications				
Instrument Platform	Tosoh AIA Analyzer 2000	Tosoh AIA Analyzer 2000	Same	N/A
Detection Method	Fluorescence	Fluorescence	Same	N/A
Assay Principle	Immunoenzymometric Assay	Immunoenzymometric Assay	Same	N/A
Test Principle	On-step sandwich assay	On-step sandwich assay	Same	N/A
Specimen Types	Human EDTA plasma	Human EDTA plasma	Same	N/A
Specimen Collection Methodology	Routine Phlebotomy Techniques	Routine Phlebotomy Techniques	Same	N/A
Analyte	Human B-type Natriuretic Peptide (BNP)	Human B-type Natriuretic Peptide (BNP)	Same	N/A
Measuring Range	4.0 – 2000 pg/mL	4.0 – 2000 pg/mL	Same	N/A
Cut-off	100 pg/mL	100 pg/mL	Same	N/A
Manual & Automated Dilution	Manual dilution study had a recovery value of 102% for 1:5 and 100% for 1:10 dilution. On-board (automated) dilution study had a recovery value of 95% for 1:5 and 95% for 1:10 dilution.	Not previously cleared	Different	No

11. RISK MANAGEMENT

The Risk Management was performed in compliance with EN ISO 14971:2012 *Medical Devices – Application of Risk Management to Medical Devices*. The Failure Modes Effects Analysis (FMEA) methodology was used to systematically identify, estimate, evaluate, control and report risks to ensure the development and maintenance of a safe and effective product that meets its intended use.

12. VERIFICATION AND VALIDATION SUMMARY

All verification and validation activities were performed in accordance with relevant standards, established plans, protocols, and Design Control procedures. Testing verified all acceptance criteria were met. Verification of the changes did not raise any new items of safety and effectiveness.

13. SUMMARY OF PERFORMANCE DATA

Refer to Table 3 – Comparison Table of Technological Characteristics: Subject Device to Predicate Device for the summary results of the verification and validation testing.

14. SUBSTANTIAL EQUIVALENCE STATEMENT

All verification and validation testing conducted with the ST AIA-PACK BNP assay demonstrate that the modified device met the predetermined acceptance criteria, supporting the determination of substantial equivalence to the predicate device.

The modifications to the predicate device to provide a manual and automated dilution claim do not substantially change the device. The validation and verification data demonstrate that the performance of the ST AIA-PACK BNP assay to detect BNP is substantially equivalent to the predicate device.

15. CONCLUSION

Tosoh Bioscience, Inc. believes that the ST AIA-PACK BNP, is substantially equivalent in intended use and technological characteristics to the previously cleared ST AIA-PACK BNP (k192083). The ST AIA-PACK BNP, therefore, meets the Federal Food, Drug and Cosmetic Act criteria for 510(k) clearance of this device.