May 14, 2020

Fujirebio Diagnostics, Inc.
Kristin Maddaloni
Regulatory Affairs Specialist
201 Great Valley Parkway
Malvern, Pennsylvania 19355

Re: K200997
Trade/Device Name: Lumipulse G CA19-9-N
Regulation Number: 21 CFR 866.6010
Regulation Name: Tumor-Associated Antigen Immunological Test System
Regulatory Class: Class II
Product Code: NIG
Dated: April 15, 2020
Received: April 16, 2020

Dear Kristin Maddaloni:

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,

Carolina Kagan
Acting Chief
Division of Immunology and Hematology 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: 06/30/2020
See PRA Statement below.

510(k) Number *(if known)*
K200997

Device Name
Lumipulse ***G*** CA19-9-N

Indications for Use *(Describe)*

WARNING: The concentration of CA19-9 in a given specimen, as determined by assays from different manufacturers, can vary due to differences in assay methods and reagent specificity. The results reported by the laboratory to the physician must include the identity of the assay for CA19-9 used. Values obtained with different assay methods cannot be used interchangeably. If, in the course of monitoring a patient, the assay method used for determining serial levels of CA19-9 is changed, the laboratory must perform additional serial testing to confirm baseline values. Prior to changing assays, the laboratory MUST confirm baseline values for patients being serially monitored. **Lumipulse *G* CA19-9-N should not be used for cancer screening or diagnosis**.

WARNING: Patients known to be genotypically negative for the Lewis blood group antigen will be unable to produce the CA19-9 antigen even in the presence of malignant tissue. Phenotyping for the presence of the Lewis antigen may be insufficient to detect true Lewis antigen negative individuals. Even patients who are genotypically positive for the Lewis antigen may produce varying levels of CA19-9 based on gene dosage effect.

Lumipulse ***G*** CA19-9-N is a Chemiluminescent Enzyme Immunoassay (CLEIA) for the quantitative measurement of CA19-9 in human serum or plasma (sodium heparin, lithium heparin, or dipotassium EDTA) on the LUMIPULSE ***G*** System.

The assay is to be used as an aid in the management of patients diagnosed with cancer of the exocrine pancreas who have detectable levels of CA19-9 at some point in their disease process. Serial testing for patient CA19-9 assay values should be used in conjunction with other clinical methods used for monitoring cancer of the exocrine pancreas.

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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SPECIAL 510(k) SUMMARY

A. GENERAL INFORMATION

Submission Date: April 15, 2020

Submitter Information:

Submitted By: Fujirebio Diagnostics, Inc.
201 Great Valley Parkway
Malvern, PA 19355

Contact Person: Kristin Maddaloni
Regulatory Affairs Specialist
Fujirebio Diagnostics, Inc.
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Malvern, PA 19355
Office: 484-395-2126
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B. PURPOSE FOR SUBMISSION

Special 510(k) for a test concentration change to therapeutic interferent Tamoxifen for Lumipulse ***G*** CA19-9-N.

C. MEASURAND

CA 19-9

D. TYPE OF TEST

Quantitative, Chemiluminescent Immunoassay

E. APPLICANT

Fujirebio Diagnostics, Inc.

F. PROPRIETARY AND ESTABLISHED NAMES

Lumipulse® ***G*** CA 19-9-N
Lumipulse® ***G*** CA19-9-N Immunoreaction Cartridges

G. REGULATORY INFORMATION

Trade Name:	Lumipulse ***G*** CA19-9-N
Classification:	Class II
Regulation:	21 CFR 866.6010
Regulation Name:	Tumor-Associated Antigen Immunological Test System
Product Code:	NIG – System, Test, Carbohydrate antigen (CA 19-9) for monitoring and management of pancreatic cancer
Panel:	82, Immunology

H. INTENDED USE / INDICATIONS FOR USE

1. Warning Statements

   The concentration of CA 19-9 in a given specimen, as determined by assays from different manufacturers, can vary due to differences in assay methods and reagent specificity. The results reported by the laboratory to the physician must include the identity of the assay for CA 19-9 used. Values obtained with different assay methods cannot be used interchangeably. If, in the course of monitoring a patient, the assay method used for determining serial levels of CA 19-9 is changed, the laboratory must perform additional serial testing to confirm baseline values. Prior to changing assays, the laboratory MUST confirm baseline values for patients being serially monitored. Lumipulse ***G*** CA19-9-N should not be used for cancer screening or diagnosis.

   Patients known to be genotypically negative for Lewis blood group antigen are unable to produce the CA 19-9 antigen even in the presence of malignant tissue. Phenotyping for the presence of the Lewis blood group antigen may be insufficient to detect true Lewis antigen negative individuals. Even patients who are genotype positive for the Lewis antigen may produce varying levels of CA 19-9 as the result of gene dosage effect. pancreas.

2. Intended Use / Indications for use

   Lumipulse® ***G*** CA19-9-N is a Chemiluminescent Enzyme Immunoassay (CLEIA) for the quantitative measurement of CA 19-9 in human serum or plasma (sodium heparin, lithium heparin, or dipotassium EDTA) on the LUMIPULSE ***G*** System.

   The assay is to be used as an aid in the management of patients diagnosed with cancer of the exocrine pancreas who have detectable levels of CA 19-9 at some point in their disease process. Serial testing for patient CA 19-9 assay values should be used in conjunction with other clinical methods used for monitoring cancer of the exocrine pancreas.

3. Special instrument requirements:

   Lumipulse ***G*** System

I. DEVICE DESCRIPTION

Reagents
The Lumipulse ***G*** CA19-9-N Immunoreaction Cartridges (cat. # 235126) consists of 3 × 14 tests. Each kit contains the following:

1) Antibody-Coated Particle Solution
   (Liquid when used, 250 µL/Immunoreaction Cartridge)
   Contains 150 µg/mL anti-CA19-9 monoclonal antibody (mouse)-coated particles, protein stabilizers (bovine and mouse) and chemical stabilizers in 0.15 M sodium chloride/Tris

buffer. This solution contains gelatin and turns into gel at 15 °C or lower. Preservative: sodium azide.

2) Enzyme-Labeled Antibody Solution
(Liquid, 350 µL/Immunoreaction Cartridge)
Contains 0.5 µg/mL alkaline phosphatase (ALP: calf)-labeled anti-CA19-9 monoclonal antibody (mouse), protein stabilizers (bovine, calf, and mouse) and chemical stabilizers in 0.05 M sodium chloride/Bis-Tris buffer. Preservative: sodium azide.

J. DESCRIPTION OF MODIFIED DEVICE

1. Modified device: Tamoxifen was tested at 6.0 mg/dL. Tamoxifen test concentration was originally tested at 0.228 mg/dL in the cleared device under K191973, but now it has been tested at 6.0 mg/dL for the modified device.

2. Modified Device Comparison to the Cleared Device:

	Lumipulse® *G* CA19-9-N Cleared under K191973	**Lumipulse® *G* CA19-9-N Modified Device**
SIMILARITIES		
Assay Intended Use	Lumipulse® ***G*** CA19-9-N is a Chemiluminescent Enzyme Immunoassay (CLEIA) for the quantitative measurement of CA 19-9 in human serum or plasma (sodium heparin, lithium heparin, or dipotassium EDTA) on the LUMIPULSE ***G*** System. The assay is to be used as an aid in the management of patients diagnosed with cancer of the exocrine pancreas who have detectable levels of CA 19-9 at some point in their disease process. Serial testing for patient CA19-9 assay values should be used in conjunction with other clinical methods used for monitoring cancer of the exocrine pancreas.	Same
Product Code	NIG	Same
Regulation	21 CFR 866.6010	Same
Antibody Type and Source	monoclonal antibody (mouse)	Same
Sample Type	human serum and plasma	Same
Reagent Storage	Store at 2-10°C	Same
Sample Size	100 µL	Same
Calibration Frequency	Every 30 days	Same
Instrument	Lumipulse ***G*** System	Same
Methodology	CLEIA	Same
Measuring Range	0.7-500 U/mL	Same

	Lumipulse® *G* CA19-9-N Cleared under K191973	**Lumipulse® *G* CA19-9-N Modified Device**
Capture	Monoclonal anti-CA19-9 antibody (mouse)-coated particles	Same
Conjugate Antibody	ALP (calf)-labeled anti-CA19-9 monoclonal mouse antibody	Same
Calibrators	2 level set (1 vial/level): • Cal 1: 0 U/mL • Cal 2: 500 U/mL	Same
Calibration Range	0-500 U/mL	Same
Controls	2 levels every 24 hours	Same
DIFFERENCES		
Tamoxifen Test Concentration	Tamoxifen test concentration was originally tested at **0.228 mg/dL** according to the study protocol; (however in the 510(k), a typographical error occurred, and it was listed as 6.0 mg/dL.)	Tamoxifen test concentration is tested at **6.0 mg/dL** per a new protocol and study report.
Samples (Mean Test Concentrations (U/mL) (n=3))	Serum Pool 1 = 30.1 Serum Pool 2 = 189.5 Serum Pool 3 = 330.1	Serum Pool 1 = 31.2 Serum Pool 2 = 184.4 Serum Pool 3 = 327.8
Samples (Mean Control Concentrations (U/mL) (n=3))	Serum Pool 1 = 30.1 Serum Pool 2 = 187.5 Serum Pool 3 = 322.4	Serum Pool 1 = 31.3 Serum Pool 2 = 187.9 Serum Pool 3 = 324.0
Test Concentration	0.228 mg/dL	6.0 mg/dL
% Difference Results	0% to 2%	-2% to 1%

K. STANDARDS/GUIDANCE DOCUMENTS REFERENCED

- CLSI EP07 - Interference Testing in Clinical Chemistry; Approved Guideline – Third Edition. 2018
- CLSI EP37 - Supplemental Tables for Interference Testing in Clinical Chemistry; Approved Guideline – First Edition. 2018

L. TEST PRINICIPLE

Lumipulse® ***G*** CA19-9-N is an assay system, including a set of immunoassay reagents, for the quantitative measurement of CA 19-9 in human serum and plasma (sodium heparin, lithium heparin, or dipotassium EDTA) based on CLEIA technology by a two-step immunoassay method on the LUMIPULSE ***G***1200 System. CA 19-9 in specimens specifically binds to anti-CA19-9 monoclonal antibody (mouse) on the particles, and antigen-antibody immunocomplexes are formed. The particles are washed and rinsed to remove unbound materials. Alkaline phosphatase (ALP: calf)-labeled anti-CA19-9 monoclonal antibody (mouse) specifically binds to CA 19-9 of the immunocomplexes on the particles, and additional immunocomplexes are formed. The particles are washed and rinsed to

remove unbound materials. Substrate Solution is added and mixed with the particles. AMPPD contained in the Substrate Solution is dephosphorylated by the catalysis of ALP indirectly conjugated to particles. Luminescence (at a maximum wavelength of 477 nm) is generate by the cleavage reaction of dephosphorylated AMPPD. The luminescent signal reflects the amount of CA 19-9.

Indicated for the serial measurement of CA 19-9 to aid in the management of patients diagnosed with cancers of the pancreas. Serial testing with Lumipulse® ***G*** CA19-9-N for CA 19-9 patient values is used in conjunction with other clinical methods in the management of pancreatic cancer patients.

M. SUMMARY OF DESIGN CONTROL ACTIVITIES

Design Control Activities Summary for Test Concentration Change for Therapeutic InterferentTamoxifen

Device Change	Risks	Verification/ Validation Method(s)	Acceptance Criteria	Summary of Results
Tamoxifen is tested at concentration of 6.0 mg/dL	There is no risk to this device change. The test concentration to tamoxifen is being updated to ensure the concentration listed in our PI is appropriate for the intended use population.	Supplemental Therapeutic Interference Study performed for tamoxifen. (protocol and acceptance criteria were the same as found in K191973 *019_Section 18_Lumipulse G CA19-9-N_Bench*, without any deviations) The Supplemental Therapeutic Interference Study was run to mitgate any risk because it was performed with a higher concentration of Tamoxifen than was originally reported in the 510(k) labeling.	Individual samples must have a percent difference of ± 10% difference from the control.	-2% to 1% (Met acceptance of ±10% difference for each individual sample between the test and control samples.)

N. ADDITIONAL UPDATE

In the original 510(k) Summary and labeling for K191973, there was a typo for Streptozotocin. It was listed as 3.96 mg/dL but should have been 28 mg/dL. This update has been made to the 510(k) Summary and labeling and is included in this submission.

O. DECLARATION OF CONFORMITY (DOC)

Please see K191973, *010_Section 9_Lumipulse G CA19-9-N 510k_Decl of Conformity* for the declaration of conformity.