February 1, 2022

Shenzhen VitaVitro Biotech Co., Ltd.
Donghai Pan
International Regulatory Specialist
R601, Building B, Hai Ke Xing Tech Park, Baoshan Road No.16
Shenzhen, Guangdong 518118
China

Re: K212410
Trade/Device Name: VitaVitro® Sperm Washing Medium, VitaVitro® Sperm Gradient Medium
Regulation Number: 21 CFR§ 884.6180
Regulation Name: Reproductive Media and Supplements
Regulatory Class: II
Product Code: MQL
Dated: December 16, 2021
Received: December 30, 2021

Dear Donghai Pan:

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); 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,

For
Monica D. Garcia, Ph.D.
Assistant Director
DHT3B: Division of Reproductive,
Gynecology and Urology Devices
OHT3: Office of GastroRenal, ObGyn,
General Hospital and Urology Devices
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)*
K212410

Device Name
VitaVitro® Sperm Washing Medium, VitaVitro® Sperm Gradient Medium

Indications for Use *(Describe)*
VitaVitro® Sperm Washing Medium is intended for preparation and washing of sperm for use in assisted reproduction procedures. VitaVitro® Sperm Washing Medium is also intended for use in intrauterine insemination procedures.

VitaVitro® Sperm Gradient Medium is intended for separation of motile sperm from seminal fluid for use in assisted reproduction procedures.

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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510(k) SUMMARY
K212410

1. Submission Sponsor

Shenzhen VitaVitro Biotech Co., Ltd.
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China
Contract Person: Mr. Donghai Pan
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Email: pandh@vitavitro.com

2. Date Prepared

January 26, 2022

3. Device Identification

Trade Name:	VitaVitro® Sperm Washing Medium, VitaVitro® Sperm Gradient Medium
Common Name:	Sperm Washing Medium, Sperm Gradient Medium
Regulation Number:	21 CFR 884.6180
Regulation Name:	Reproductive Media and Supplements
Regulatory Class:	Class II
Product Code:	MQL (Media, Reproductive)

4. Predicate Device

Table 1. Predicate Devices

Subject Devices		VitaVitro® Sperm Washing Medium	VitaVitro® Sperm Gradient Medium
Predicate Devices	**Trade Name**	SepaSperm Washing Solution	SepaSperm Solution
	Manufacturer	Kitazato Corporation	
	510(k) No.	K190199	
	Regulatory Class	Class II	
	Product Code	MQL (Media, Reproductive)	

The predicate devices have not been subject to any design-related recalls.

5. Device Description

VitaVitro® Sperm Washing Medium and VitaVitro® Sperm Gradient Medium are ready-to-use solutions intended for preparing sperm for use in assisted reproductive procedures:

- VitaVitro® Sperm Washing Medium is for sperm washing and preparation, and for intrauterine insemination procedures.
- VitaVitro® Sperm Gradient Medium is for sperm density-gradient centrifugation and separation from seminal fluid.

Both devices have a similar base formulation; however, the VitaVitro® Sperm Gradient Medium formulation differs as it contains silane silica and does not contain Human Serum Albumin (HSA). The silane silica in the VitaVitro® Sperm Gradient Medium (upper layer 40%, lower layer 80%) generates the density gradient for sperm separation procedures.

The subject devices are aseptically filtered, colorless solutions, contained in transparent and sterilized (gamma irradiation) polyethylene terephthalate glycol (PETG) bottles, sealed with high density polyethylene (HDPE) closures, provided in cardboard boxes, individually labeled and with an instruction for use provided as a package insert.

The devices are provided in the following volumes:

- VitaVitro® Sperm Washing Medium: 30mL, 60mL, and 125mL
- VitaVitro® Sperm Gradient Medium: 12mL, 30mL, and 125mL

Both devices have a two-year shelf-life when stored as recommended. These devices are for single-used only.

6. Indications for Use

Table 2. Indications for Use

No.	Device Name	Indications for Use
1	VitaVitro® Sperm Washing Medium	VitaVitro® Sperm Washing Medium is intended for preparation and washing of sperm for use in assisted reproduction procedures. VitaVitro® Sperm Washing Medium is also intended for use in intrauterine insemination procedures.
2	VitaVitro® Sperm Gradient Medium	VitaVitro® Sperm Gradient Medium is intended for separation of motile sperm from seminal fluid for use in assisted reproduction procedures.

7. Comparison of intended use and technological characteristics of the subject and predicate devices

The table below provides comparisons of the intended use and technological characteristics of the subject and predicate devices.

Table 3. Comparison Between Subject and Predicate Devices

Parameters for comparison	Subject Devices VitaVitro® Sperm Washing Medium, VitaVitro® Sperm Gradient Medium	Predicate Devices SepaSperm Washing Solution, SepaSperm Washing Solution	Comparison
Indications for Use	VitaVitro® Sperm Washing Medium is intended for preparation and washing of sperm for use in assisted reproduction procedures. VitaVitro® Sperm Washing Medium is also intended for use in intrauterine insemination procedures. VitaVitro® Sperm Gradient Medium is intended for separation of motile sperm from seminal fluid for use in assisted reproduction procedures.	SepaSperm Washing Solution is used for preparation and washing of sperm for use in assisted reproduction procedures. SepaSperm Washing Solution is not intended for use in intrauterine insemination procedures. SepaSperm Solution is used for separation of motile sperm from seminal fluid for use in assisted reproduction procedures.	The indications for use statements for the VitaVitro® Sperm Washing Medium and the SepaSperm Washing Solution are not identical, as the VitaVitro® Sperm Washing Medium can also be used for intrauterine insemination (IUI) procedures. The use for IUI procedures represents an additional use of the VitaVitro® Sperm Washing Medium, but does not represent a new intended use (i.e., washing and preparing sperm for use in assisted reproduction procedures). The indications for use and intended use of the VitaVitro® Sperm Gradient Medium and the SepaSperm Solution are the same.
Device Materials	HEPES Buffered Salt Solution; Glucose; Sodium Lactate; Sodium Pyruvate; Taurine; Alanyl Glutamine; Gentamicin Sulfate; EDTA; Water; Human Serum Albumin (VitaVitro® Sperm Washing Medium only); Silane-coated Colloidal Silica Particles (VitaVitro® Sperm Gradient Medium only)	HEPES Buffered Salt Solution; D-glucose; Dextran; Polyvinylpyrrolidone; Gentamicin (with or without); Water; Silica (SepaSperm Solution only)	**Different:** The formulations and volume of the subject and predicate devices are not identical. Differences in media product formulations and volume do not raise different questions of safety and effectiveness (S&E).
Packaging	30mL, 60mL, 125mL bottle	50mL, 100mL bottle	
Sterility	No microbial growth	No microbial growth	Same
Osmolality	VitaVitro® Sperm Washing Medium: 270-300 mOsm/kg VitaVitro® Sperm Gradient Medium:	270-300 mOsm/kg	**Different:** The osmolality of the VitaVitro® Sperm Gradient Medium is higher than the predicate. Differences in media

Parameters for comparison	Subject Devices VitaVitro® Sperm Washing Medium, VitaVitro® Sperm Gradient Medium	Predicate Devices SepaSperm Washing Solution, SepaSperm Washing Solution	Comparison
	Upper layer 40%: 270-330 mOsm/kg Lower layer 80%: 300-360 mOsm/kg		osmolality do not raise different questions of S&E.
pH	VitaVitro® Sperm Washing Medium: 7.2-7.6 VitaVitro® Sperm Gradient Medium: 7.4-7.8	7.2-7.6	Similar
Human Sperm Survival Assay (HSSA)	≥ 80% of control motility at 24h	≥ 80% of control motility at 24h	Same
Endotoxin	< 0.25 EU/mL	< 0.25 EU/mL	Same
Storage Temperature	2 - 8°C	2 - 8°C	Same
Shelf-life	2 years	1 year (with gentamicin)	**Different:** The shelf-life of the subject and predicate devices is not the same. Differences in shelf-life do not raise different questions of S&E.

As shown in the table above, there are differences in the indications for use statements and technological features of the subject and predicate devices. However, as stated in the table, the differences in indications for use do not represent a new intended use and the differences in technological features do not raise different questions of safety and effectiveness.

8. Summary of Non-Clinical Performance

The following studies have been performed to support substantial equivalence to the predicate devices. Results confirm that the design inputs and performance specifications for the device are met.

Table 4. Device Specifications

Specification	VitaVitro® Sperm Washing Medium	VitaVitro® Sperm Gradient Medium
Specific gravity (per USP <841>)	N/A	Lower layer 80%: 1.10±0.03 g/ mL Upper layer 40%: 1.05±0.03 g/mL
pH (per USP <791>)	7.2 - 7.6	7.4 - 7.8
Osmolality (per USP <785>)	270-300 mOsm/Kg	Lower layer 80%: 300-360 mOsm/kg Upper layer 40%: 270-330 mOsm/kg
Endotoxin (per USP <85>)	< 0.25 EU/mL	< 0.25 EU/mL
Human Sperm Survival Assay (HSSA)	≥ 80% of control motility at 24h	≥ 80% of control motility at 24h

Sterility (per USP <71>)	No microbial growth	No microbial growth

- Sterile filtration and aseptic fill validation, per ISO 13408-1:2008 (Aseptic processing of health care products - Part 1: General requirements) and ISO 13408-2:2018 (Aseptic processing of health care products - Part 2: Sterilizing filtration).
- Transportation testing per ASTM D4169-16 (Standard Practice for Performance Testing of Shipping Containers and Systems).
- Shelf-life testing to support the two-year shelf-life by demonstrating that the product specifications listed in Table 4 were met at time 0 and after accelerated aging in accordance with ASTM F1980-16.
- Biocompatibility testing was conducted in support of the VitaVitro® Sperm Washing Medium that will have direct contact with the patient during IUI procedures. Testing was conducted in accordance with the 2020 FDA guidance document "Use of International Standard ISO 10993-1, Biological Evaluation of Medical Devices – Part 1: Evaluation and testing within a risk management process." Testing included:
    - Cytotoxicity per ISO 10993-5: 2009
    - Sensitization per ISO 10993-10: 2010
    - Irritation per ISO 10993-10: 2010

  The testing demonstrated the device formulation to be non-cytotoxic, non-sensitizing, and non-irritating.
- Sperm assessment for motility, morphology, viability, and purity before and after separation procedures using VitaVitro® Sperm Gradient Medium to assess the effectiveness of the device when used as intended.

9. Conclusion

The results of the performance testing described above demonstrate that the subject media products are as safe and effective as the predicate devices and support a determination of substantial equivalence.