IVD Rx

Biosci™ Inactivated Transport Medium

Instructions for use

Intended Use

Biosci™ Inactivated Transport Medium (Biosci™ ITM) is intended for the collection, inactivation, stabilization and transportation of an unprocessed upper respiratory clinical specimen suspected of containing influenza A virus RNA from the collection site to the testing laboratory. The specimen collected in Biosci™ ITM is suitable for use with compatible molecular assays.

Principle of Procedure

Biosci™ ITM contains a detergent and a protein denaturant to inactivate influenza A, lyse cells, disrupt lipid membranes, denature proteins and enzymes, and preserve and stabilize influenza A virus RNA. Therefore, Biosci™ ITM is not intended to be used for preserving virus infectivity or to be used for culture-based techniques.

Product Description

Specimen collection and transportation is a key part of molecular detection and the stabilization of influenza A (also referred to as Flu A) virus RNA. Biosci™ Inactivated Transport Medium (Biosci™ ITM) is provided in two different formats – in tube or in kit. The format in kit is supplied in customer convenient pre-packaged collection sets for routine procedures in the diagnosis of infections caused by Flu A virus. Each set comprises of a package containing peel pouch incorporating one specimen collection swab for the collection and one labeled screw-cap tube pre-filled with Biosci™ ITM for safe transportation of biological specimen, and one specimen bag for preventing leakage of biological samples. The format in tube only contains labeled screw-cap tubes pre-filled with Biosci™ ITM. There is no difference between the transport medium contained in the two formats of product. For details, please see **Model & Specification**.

Model & Specification

Catalog#	Model	Description	Pack Size
3983011	ITMM	3 mL of Inactivated Transport Medium in screw-cap tube.	50 tests per package
3983021		2 mL of Inactivated Transport Medium in screw-cap tube.	
3983031		1 mL of Inactivated Transport Medium in screw-cap tube.	
3983311	ITMN	3 mL of Inactivated Transport Medium in screw-cap tube, with nasopharyngeal swabs.	50 tests per package
3983211		2 mL of Inactivated Transport Medium in screw-cap tube, with nasopharyngeal swabs.	
3983111		1 mL of Inactivated Transport Medium in screw-cap tube, with nasopharyngeal swabs.	
3983321	ITMO	3 mL of Inactivated Transport Medium in screw-cap tube, with oropharyngeal swabs.	50 tests per package
3983221		2 mL of Inactivated Transport Medium in screw-cap tube, with oropharyngeal swabs.	
3983121		1 mL of Inactivated Transport Medium in screw-cap tube, with oropharyngeal swabs.	
3983361		3 mL of Inactivated Transport Medium in screw-cap tube, with mid-turbinate swabs.	

3983261	ITMT	2 mL of Inactivated Transport Medium in screw-cap tube, with mid-turbinate swabs.	50 tests per package
3983161		1 mL of Inactivated Transport Medium in screw-cap tube, with mid-turbinate swabs.	

Reagents

Biosci™ ITM contains:

- Guanidine hydrochloride
- EDTA disodium salt dihydrate
- Trisodium citrate dihydrate
- Tris
- TCEP
- HCl
- Antifoam A Concentrate
- NP-40
- Distilled water

Warnings and Precautions

1. Biosci™ ITM is for professional use only.
2. For *in vitro* diagnostic use only.
3. For single use only. Do not re-sterilize or reuse.
4. Biosci™ ITM is not for external or internal use in humans or animals.
5. Biosci™ ITM contains a cell lysing agent, therefore a pelleting procedure is not recommended for nucleic acid concentration.
6. Read the information in this Package Insert and follow the directions carefully.
7. Avoid contact of Biosci™ ITM liquid with skin and mucous membranes. If contact occurs, immediately rinse with copious amounts of water.
8. DO NOT insert swab into Biosci™ ITM liquid before collection of patient specimens.
9. DO NOT transfer Biosci™ ITM liquid into other tubes.
10. Dispose of all containers in accordance with national regulations, including unused and used items.
11. Biosci™ ITM should not be used if:
    - the package is damaged or open
    - there is evidence of leakage or contamination to the product
    - the expiration date has passed
    - there are signs of turbidity or precipitation, or
    - there are other signs of deterioration.

Materials Provided

Inactivated Transport Medium

The Inactivated Transport Medium is provided in a one screw-cap tube, with different configurations of 1, 2, or 3mL.

Swab

Nasopharyngeal swab/Oropharyngeal swab/Mid-turbinate swab

NOTE: Model ITMM is only provide as a tube containing Inactivated Transport Medium (without swab).

Materials Required But Not Provided

Appropriate materials and reagents for molecular testing are not supplied. Refer to the molecular assay manufacturer's IFU for recommended materials, protocols and assay techniques.

Storage Conditions and Expiry Date

The product must be stored in the original packaging at room temperature (18-25 ℃) and has a shelf-life of 18 months. See table below for component storage conditions:

Inactivated Transport Medium	Store at 18℃ -25℃
Swab	Store at 18℃ -25℃

NOTE: Do not use after expiration date, which is clearly printed on the outer box on each individual sterile pouch unit, and the specimen transport tube label. Do not overheat or freeze prior to use. Improper storage may result in a loss of efficacy.

Instructions for Use

Specimen Collection, Transport, and Storage

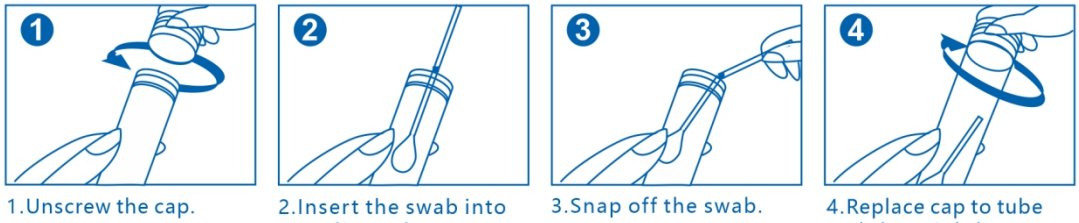
Specimens should be collected and handled following standard laboratory procedures by a trained health care provider. [1,2]. Proper specimen collection, transport, storage, and processing in the laboratory are extremely critical to obtain accurate analytical results.

Follow biohazard precautions and aseptic techniques when collecting and processing specimens [3]. For specific guidance regarding specimen collection procedures, consult local, state and federal regulations.

Do not use Biosci™ ITM liquid for pre-moistening or pre-wetting the sampling device prior to collecting the sample or for rinsing or irrigating the sample site.

Procedures

1. After removing the swab and collecting the specimen, unscrew the cap from Biosci™ ITM tube, taking care not to spill the medium (Fig. 1).
2. Insert the swab into the tube with Biosci™ ITM until the breakpoint reaches the level of the opening of the tube (Fig. 2).
3. Snap off the swab shaft at the pre-scored line by bending it against the tube wall (Fig. 3).
4. Replace cap to tube and close tightly (Fig. 4).
5. Label with appropriate patient information as required.
6. Transport the samples to the laboratory (See **Use in the laboratory**) at 2-25℃ or according to your internal laboratory protocols.
7. The product usage diagram is as follows:



1.Unscrew the cap. 2.Insert the swab into sampling tube. 3.Snap off the swab. 4.Replace cap to tube and close tightly.

Use in the Laboratory:

Specimens for nucleic acid detection should be promptly processed when received in the

laboratory. Specimens preserved in Biosci™ ITM for nucleic acid detection may require nucleic acid extraction and purification, before amplification and nucleic acid detection, based on laboratory validation data.

Appropriate personal protective equipment should be worn when handling clinical specimens. Properly vortex specimen prior to use for downstream assays.

Disposal

Waste must be disposed of in compliance with laboratory procedure and local, state and federal regulations. Take the appropriate precautions for infected material if necessary.

Limitations

1. Performance characteristics of Biosci™ ITM have been demonstrated for only Flu A virus RNA.
2. The user is responsible for validating Biosci™ ITM with all diagnostic assays.
3. Performance characteristics of Biosci™ ITM have only been demonstrated for Flu A from swabs.
4. The user is responsible for establishing appropriate system performance characteristics for all specimen types.
5. The Biosci™ ITM system has only been validated using a validated PCR assay for the detection of Flu A RNA. The user is responsible for validating additional extraction and purification kits and platforms for compatibility and sensitivity.

Performance Characteristics

An analytical sensitivity study was conducted to determine the Flu A (H1N1 ATCC VR-1736™ A/Virginia/ATCC1/2009) Limit of Detection (LoD) obtained by Biosci™ ITM in combination with a validated PCR assay. The LoD of Biosci™ ITM for Flu A, in negative clinical matrix, was determined to be 0.2 $TCID_{50}$/mL (Table 1).

Table 1 Summary of results obtained at the dilution corresponding to 0.2 $TCID_{50}$/mL (in matrix) during the LoD study

	Biosci™ ITM samples
Number of positive replicates	24/24
AVG (Ct value)	35.79
SD (Ct value)	0.67

A stability study was designed to demonstrate that RNA from Flu A is preserved and stable in Biosci™ ITM, as well as to demonstrate that the ability to stabilize Flu A RNA is not diminished with the aging of Biosci™ ITM. The stability of Flu A RNA in multiple lots of Biosci™ ITM of various ages was tested using a validated PCR assay. The results (Table 2) confirmed that Flu A RNA is stable in Biosci™ ITM for 14 days when stored at both 2-8°C and 25°C, and demonstrates Biosci™ ITM's ability to stabilize Flu A RNA within the claimed 18-month shelf-life.

Table 2 Flu A stability in Biosci™ ITM at time zero and after 14 days at 2-8°C and 25°C

Biosci™ ITM samples	**Results**

Time zero (2-8℃)	Number of positive replicates	24/24
	AVG (Ct value)	32.26
	SD (Ct value)	0.22
14 days at 2-8℃	Number of positive replicates	24/24
	AVG (Ct value)	31.58
	ΔCt value (14d-T0)	-0.68
	SD (Ct value)	0.31
Time zero (25℃)	Number of positive replicates	24/24
	AVG (Ct value)	32.20
	SD (Ct value)	0.31
14 days at 25℃	Number of positive replicates	24/24
	AVG (Ct value)	31.55
	ΔCt value (14d-T0)	-0.65
	SD (Ct value)	0.28

An inactivation study was conducted to verify that Biosci™ Inactivated Transport Medium (Biosci™ ITM) inactivates Flu A virus. Flu A (H1N1 ATCC VR-1736) at concentrations of 1.2×10^9, 1.2×10^8, and 1.2×10^7 $TCID_{50}$/mL were incubated with Biosci™ ITM. The viability of the virus was measured after 10, 20, and 30 seconds in Biosci™ ITM by inoculating aliquots onto MDCK (Madin-Darby Canine Kidney) cell lines, incubating for four days and measuring the cytopathic effect (CPE). The results (Table 3) for the inactivation study confirmed >4.0 log reduction in Flu A titer after 10 seconds of incubation in Biosci™ ITM. Also, as noted in the table, CPE was still present in samples with starting viral concentrations of $\geq10^9$ $TCID_{50}$/mL. Although reduced by ≥5 logs by the Biosci™ ITM, CPE was observed because this high viral concentration is outside the working range of the cell culture-based assay and the effect of the inactivation media can no longer be adequately assessed. Data from the lower viral concentrations are used to assess the inactivation effect and was acceptable.

Table 3 Flu A inactivation in Biosci™ ITM

Sample	Starting Flu A concentration	Viral load after 10s incubation $TCID_{50}$（Log）	Log reduction	Presence of CPE
Flu A only	1.2×10^5	10^5	N/A	Yes
	1.2×10^4	10^4	N/A	Yes
	1.2×10^3	10^3	N/A	Yes
Flu A, matrix and Biosci™ ITM	1.2×10^9	$\geq10^3$	>5	Yes
	1.2×10^8	$<10^3$	>5	No
	1.2×10^7	$<10^3$	>4	No

Conclusions:

- Biosci™ ITM has been shown to inactivate Flu A virus in 10 seconds.
- Biosci™ ITM preserves Flu A RNA for up to 14 days when stored at 2-25℃.
- Biosci™ ITM performance characteristics for Flu A stabilization have been determined with

the Biosci™ ITM using a validated PCR assay. Other extraction and amplification methods have not been validated.

References

[1] Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391 /EEC). Official Journal L262, 17/10/2000.
[2] Isenberg, H. D., 2004. Clinical Microbiology Procedures Handbook, 2nd ed. ASM, Washington, DC.
[3] National Committee for Clinical Laboratory Standards (NCCLS). 1994. Procedures for Handling and Transport of Diagnostic Specimens and Etiologic Agents. Approved Standard H5-A3.p. 0021-0045.

Basic Information

Manufacturer and after-sales service unit Name:

Shenzhen Dakewe Bio-engineering Co., LTD.
Website:http://www.dakewe.com/

Telephone: (86-755) 86235300
Registration and Production address:

Room 702-703, Building No.1, Shenzhen Biomedicine Innovations Industrial Park, No.14 Jinhui Road, Kengzi Street, Pingshan District, Shenzhen, China
After-sales service telephone: (86-755) 86235300

Zip code: 518122

U.S Agent

BIOSCI INC.

Address：3460 ROBIN LANE, STE 1, CAMERON PARK, CA 95682
CAMERON PARK, CALIFORNIA 95682, UNITED STATES

Email：robert_xu@dakewe.com

Phone Number：916-850-5188

European Representative

Lotus NL B.V.

Instruction Approval and Revision Date

2023.01.18

Product Label Symbol Description

Symbol	Description	Symbol	Description
REF	Catalogue number	LOT	Batch code
	Date of manufacture		Manufacturer
	Expiration date	25°C 18°C	Storage Conditions 18°C-25°C
	Do not use if package is damaged		Do not reuse
	Consult instructions for use	IVD	In Vitro Diagnostic Use

Biosci™	Product trademarks	DAKEWE	Company logo
CE	CE Certification	EC REP	Authorized Representative in the European Community
℞	Prescription Use	STERILE R	Sterilized using irradiation