The Gazette

n.4 April 2024

AIRBIO ONE RAPID-VIRUS FOR TOTAL PATHOGEN MONITORING OF VIRUS, BACTERIA, MOLDS, YEAST

Quick analytical results without incubation when paired with molecular analysis (e.g.: PCR)

SAMPLING

ANALYSIS (E. G.: PCR)

QUESTIONS & ANSWERS

Q&A 1 **WHAT IS THE AIRBIO ONE RAPID VIRUS?**

The AIRBIO ONE RAPID VIRUS is an airborne collector to be used for pathogen detection, including viruses. After collection, the liquid is delivered to a laboratory for molecular-based detection.

Q&A 2 **WHICH IS THE PRINCIPLE OF THE SYSTEM?**

The air is aspirated and mixed in a sterile pre-analytical liquid that is then utilized for the molecular test

Q&A 3 **WHAT IS THE AIR FLOW RATE?**

The air flow rate is…… Other factors like sampling time period, size of the room, HVAC, air exchange rates of the ventilation system should be considered

Q&A 4 **HOW THE AIR SAMPLER IS COMMANDED?**

All operations are controlled by a simple panel in front of the unit.

Q&A 5 **WHAT ABOUT CLEANING AND MAINTENANCE?**

The external surfaces of the instrument are treated with 70% sterile alcohol wipes. The container of the collecting fluid can be autoclaved.

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Q&A 6 **HOW IS IT POSSIBLE TO COLLECT SEVERAL CONSECUTIVE SAMPLES?**

The system is disinfected by sterile 70% alcohol (or other suitable chemical product) by circulating it for 10 minutes after each sampling cycle.

Q&A 7 **WHAT CONSUMABLES ARE USED WITH THE AIRBIO ONE RAPID VIRUS?**

It is typically used a PBS that contains different reagent depending from the method used by the analytical molecular laboratory

Q&A 8 **WHICH ANALYTICAL METHODS CAN BE USED?**

The system is designed for rapid methods such as Polymerase Chain Reaction (PCR), Genetic Sequencing, Immunoassay, Microarrays, Mass Spectrometry and classical microbiological methods.

Q&A 9 **CAN THE VARIANT COVID DETECTED THROUGH THE MONITORING OF THE AIR?**

Yes. The instrument will collect all variants of the all air borne pathogens. This virus will continuously evolve and mutate to maintain itself in the human population and will continue to do so. A programmed continuous monitoring of COVID in the air is therefore imperative.

Q&A 10 **CAN AIRBIO ONE RAPID VIRUS USED FOR TRADITIONAL CULTURE PLATE METHOD?**

Yes. The inoculated liquid can in fact be transferred to an agar culture plate for a traditional cfu count.

Q&A 11 **IS AIRBIO.ONE RAPID VIRUS EASILY TRANSPORTED?**

Yes. It is in fact housed in a portable carrying case and the weight is just 1.850 grams. The dimensions are 15x20x33h cm.

Q&A 12 **WHICH ARE THE FIELDS INTERESTED FOR THIS INSTRUMENT?**

Hospital, Clinic, Pharmaceutical compounding, Industrial segments (agro, food, dairy, beverage, etc.), Military branches, Public institutes

AIRBIO ONE RAPID-VIRUS

TRIO.BAS™

AIRBIO ONE RAPID-VIRUS is an innovative instrument for airborne viable particle sampling. It is specifically designed for total pathogen monitoring of virus, bacteria, molds and yeast.

The instrument has 2 different applications:

1) for collecting virus in a liquid sample for subsequent rapid analytical identification (by PCR)
2) for traditional impact on agar culture media plate to count colonies (CFU)

Description

The collection of micro-organisms and virus on culture media requires time for incubation before results. Instead, much faster results are obtained applying the liquid collection method.

This method has great advantages when applied in the following fields:

- Industrial segment (pharma, agro-food, beverage, etc.) for a quick reaction in identifying the contamination
- Military branches for notifying possible biological attacks
- Hospitals for finding the correct pharmacological product and treatment for patients
- Public institutes (school, restaurant, bar, metro, train, municipality buildings, etc.) for disease/pandemic monitoring

AIRBIO RAPID-VIRUS also allows a quick assessment of the disinfection protocols' efficacy.
The instrument is the result of the European NATO project EUCLID CEPA 13 ("protection of personnel against pathogenic micro-organisms via air sampling and rapid detection and identification").

Performances of virus sampling

Principle: the volume of air is aspirated and mixed in a pre-analytical liquid.

- The collection liquid system is completely sterilizable as produced in stainless steel
- Collection liquid: water, buffer, nutrient broth
- Quantity of collection liquid: 15 ml
- Battery autonomy: 70.000 litres
- 50 users and 50 places
- Dimension of the instrument: 15x20x33h cm
- Weight: 1.850 gr
- Battery: power supply - 218 VDC 60W
- Operating conditions: T° 0-45°C / RH 10% / 60%

Performances of active air sampling

Principle: the volume of air is aspirated on a culture media

- Air flow 200 l/m
- Battery autonomy: 70.000 litres
- 50 users and 50 places
- Dimension of the instrument: 15x15x24h cm
- Weight: 1.600 gr
- Battery: power supply - 218 VDC 60W
- Operating conditions: T° 0-45°C / RH 10% / 60%

Identification Codes

Code	AIRBIO ONE RAPID-VIRUS
2448K	AIRBIO ONE RAPID-VIRUS PACK consisting of: AIRBIO ONE air sampler 200 l/m, 1 s/s Petri aspirating head with s/s cover head, 1 s/s collection liquid system for virus, 2 conical bottom centrifuge tube PP (225 ml), battery charger, 1 calibration certificate and 1 robustus carrying case.
	Accessory
324	Conical bottom centrifuge tube PP - 225 ml (8 x box)
413	Self-sealing sterilization bag for s/s collection liquid system for AIRBIO RAPID-VIRUS (100 x box)
325	Collecting liquid system by PCR for AIRBIO VIRUS
329	VIRUS rack for conical tube PP - size 205x135x102 mm

1. Remove the s/s aspirating head and cover head from AIRBIO ONE

2. Position the collection liquid system into the AIRBIO ONE RAPID-VIRUS

3. Take out the conical tube from the collection liquid system

4. Fill in the liquid in the tube

5. The instrument is ready

6. On the air sampler, select VIRUS under SPECIAL SAMPLING menu and press START

7. When the sample is finished, transfer the conical tube to the laboratory for analysis

8. The sample is analysed via PCR system

Virus Sampling Protocol

1. AIR SAMPLING STRATEGY: place, time, frequency according to validated SOP
2. AIR SAMPLER PREPARATION: volume of air and type of liquid according to the analytical laboratory
3. AIR SAMPLER PROGRAMMING: air sampler protocol according to user manual and validated SOP
4. SAMPLES COLLECTION: after using a sterile conical tube, place a new sterile tube on the collection liquid system for a new test
5. SAMPLES: PCR test, qPCR RT, qPCR
6. AIR SAMPLER DECONTAMINATION: use 70% isopropyl alcohol
7. NEW SAMPLE: the air sampler is ready for a new test

Virus sampling procedures

Sampling air volumes	The suggested volume of air is 2.000 liters. The air sampler has an autonomy of 70.000 litres, but it could be more whist connected to the main power.
Sampling place	The air sampler should be positioned on the direction of the air flow (between door and windows, close to the air conditioning system of HVAC). In hospital, the sampler should be placed near to patient's bed, in public spaces where there is the highest concentration of people.
Sampling Protocol	A specific SOP (Standard Operative Procedure) needs to be prepared.
Collection liquid	The most common used liquid is phosphate buffer or saline buffer. The volume should be 15 ml. In case the aspirating time is longer, it should be necessary to add sterile water to PBS to avoid salt concentration.
Sample Storage	If the analytical sample is not processed right away, the sample needs to be stored at +4°C.
Sample transfer	The sample should be transferred at +4°C unless different indications from analytical laboratory.
Sample processing	Some protocols indicate a concentration's step (by tangential flow filtration).

AIRBIO ONE for active air sampling

Liquid collected by AIRBIO ONE RAPID-VIRUS

AIRBIO ONE RAPID-VIRUS APPLICATIONS

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BIOLOGICAL AIR SAMPLER