



Airborne virus detection in hospital environments

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Context

In winter time, two viral infections are the cause of 80% of the consultations in French hospitals: the **bronchiolitis & the gastro-enteritis**. The incriminated germs in this pathologies are respectively the RSV (Respiratory Synticial Virus) and the Rotavirus. The flow of patients, especially children, would improve the viral nosocomial infections apparition and dissemination.

Available techniques for the airborne contamination control does not allow virus detection: these methods are indeed based on impaction on agar plates and thus do not allow virus detection; also impaction on filters can be used but a step of filter dissolution would be needed. In this study, the Coriolis air sampler has been coupled with PCR detection method for RSV detection in children hospital rooms.

Material

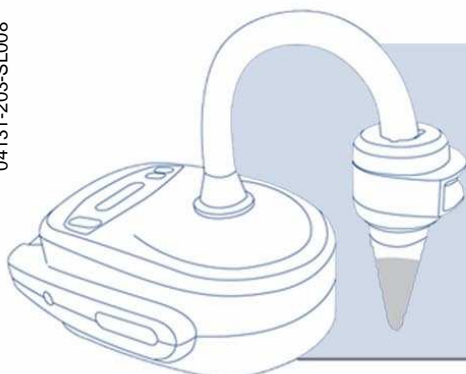
- Coriolis® + sterile cones (Bertin technologies).
- Collection liquid: 15 ml of Hanks liquid.
- Specific filters for sample concentration.
- Extraction kits for RT-PCR / Kit RSV.

Protocol

- Sampling step : 300 L/min - 10 min.
- Filtration and concentration of the sample.
- Automated RNA extraction.
- RT-PCR RSV.

Results

- 44 air samples, at most 2 days after the diagnostic.
 - Positive results by RT-PCR RSV real time for 6 samples for 3 children.
- The earliest the air sampling is done and the closest from the patient it is, the most probable it is to detect air borne virus.
- The concentration of viruses in the air are very low and would necessitate new study to go further (under process on multiplex PCR and quantification PCR).



Conclusion

The Coriolis® μ air sampler is thus capable to collect **airborne viruses detected by RT- PCR analysis**, in patient narrow environment. This study is going to be completed but still shows that airborne viruses can be controlled whereas they are often responsible for **nosocomial infections** or epidemic dissemination.

These data open a new way for airborne viruses contamination control.

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