

Viro-Adembeads Efficiency capture Respiratory Syncytial Virus

In recent publications, Dr Akikazu Sakudo and colleague of the Research Institute for Microbial Disease of Osaka University developed a new method using magnetic particle to facilitating the isolation of infectious viruses. The monitoring of infectious virus will be crucial for further virological analysis and the developpement of vaccines. However, conventional methods are relatively time-consuming, reduce infectivity and are incompatible with viral detection methods.

These studies highlight the use of Viro-Adembeads for the capture of Respiratory Syncytial Virus.

Respiratory tract infection

Respiratory Syncytial Virus (RSV) is a common seasonal disease that occurs mainly in winter, and affects respiratory tract. RSV causes severe lower respiratory infections in infants and young children and is the major cause of infantile bronchiolitis, most frequent cause of hospitalization of infants and young children in industrialized countries. According to World Health Organization (WHO) estimates, 160,000 deaths are cause every year by RSV with a further 64 millions of cases.

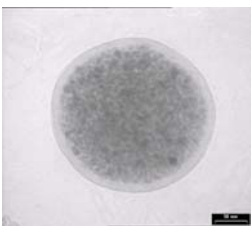


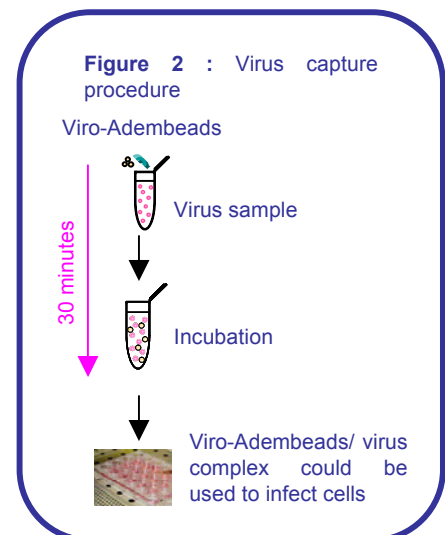
Figure 1 : Viro-Adembeads

Experimental Approach

Traditional method, polyethyleneglycol (PEG) precipitation and ultracentrifugation, are time-consuming, reduce infectivity and incompatible with conventional viral detection methods. Ultracentrifugation reduces infectivity and increases false positive rate combined with PCR. PEG precipitation is simple but partially inactivates infectious viruses. Another different approach is to use magnetic beads to simplify the process.

Viro-Adembeads are uniform and monosize magnetic nanoparticles with a large and well defined area that ensure optimal reproducibility, capacity and performance. Viro-Adembeads capture virus via a proprietary anionic and bioadhesive polymer (Fig.1).

Viral capture was performed as described in Fig.2. Following incubation in a virus containing sample, Viro-Adembeads associated to viruses are recovered and can be directly used to infect target cells.



Product	Size	Code number
Viro-Adembeads For virus capture and culture	25 prep	07010

Successful Capture of Respiratory Syncytial Virus (RSV)

Viro-Adembeads capture RSV

Dr Sakudo and colleague showed by immunochromatography for RSV fusion protein, that Viro-Adembeads capture RSV from nasal fluid. They estimate that this method could concentrate at least 10-fold virus.

Western Blot and RT-PCR analysis of RSV confirmed the detection of viral protein and RNA genome in respiratory syncytial virus captured by Viro-Adembeads (Fig 3).

Evaluation Viro-Adembeads vs conventional method

Dr Sakudo and colleague evaluated if ELISA combined with concentrating method could increase detection sensitivity. Viro-Adembeads could allow to detect RSV from nasal aspirate that could not be detected by conventional methods. However, the authors demonstrated that, in RSV-infected nasal aspirate spiked with Influenza A or B, the presence of these viruses could interfere with RSV capture. RSV was detected by ELISA but in lower quantity.

	Viro-Adembeads	Conventional method
Patient 1 (RSV-infected 2 years old female)	positif (600 mg/ml)	negatif
Patient 2 (RSV infected 2 years old female)	positif (400 mg/ml)	negatif
Patient 3 (RSV infected 1 year old male)	positif (5600 mg/ml)	negatif (1800 mg/ml)
Patient 4 (un infected 3 years old, male)	negatif	negatif
Patient 5 (Influenza A-infected, 2 years old male)	negatif	negatif
Patient 6 (Influenza B-infected 3 years old, male)	negatif	negatif

Table 2- Quantitative analysis by ELISA of RSV nasal aspirate after capture by Viro-adembeads