



ハイドロキシアパタイトへの吸着特性を用いた ウイルス検出チップ

○新美 京¹, 益田 泰輔¹, 開発 邦宏², 加藤 信雄², 新井 史人¹

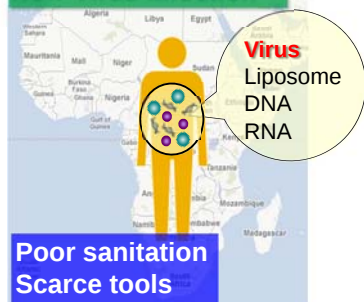
¹ 名古屋大学大学院工学研究科, ² 大阪大学産業科学研究所



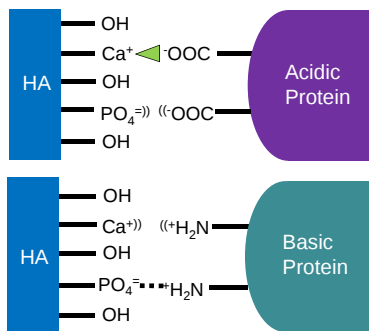
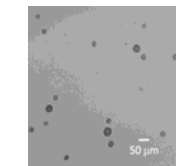
感染症患者の体液からウイルスを手軽に検出するには？

1. Background

New Virus Infection



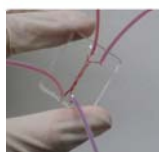
Virus Isolation by using Hydroxyapatite(HA) Chromatography



😊 High-resolution

😞 Device Size & Cost

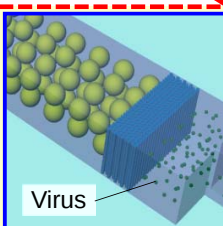
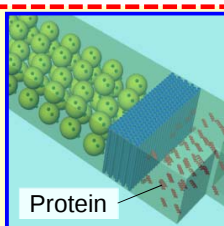
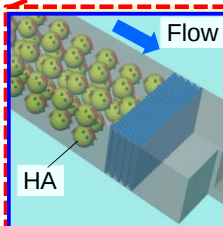
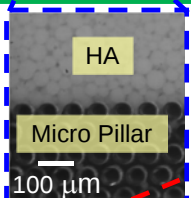
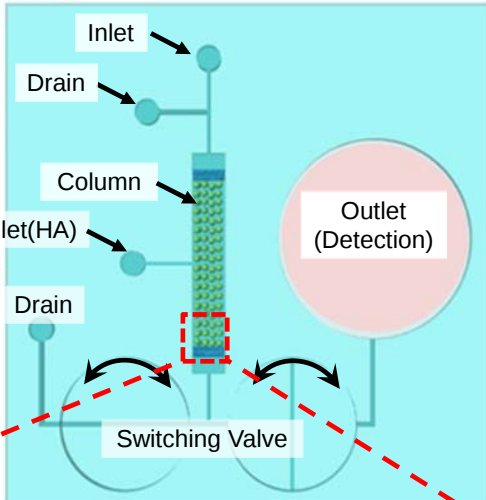
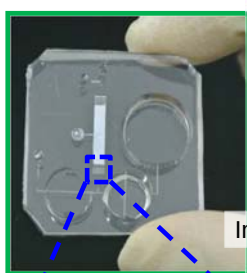
Microfluidic Chip



Small Work Place
Small Sample Volume
Low Cost
Enclosed Region

2. Concept

Virus Isolation by using On-chip Hydroxyapatite Chromatography

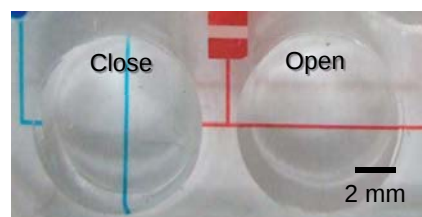
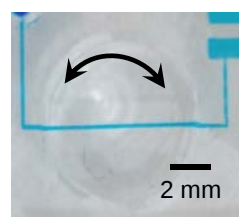


Adsorb sample on HA

Elute proteins

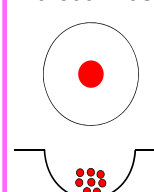
Elute viruses

Switching Valve

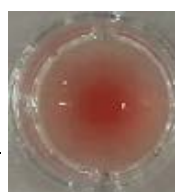
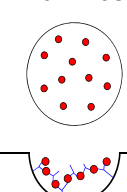


Detection Method (Hemagglutination Reaction)

Without Virus

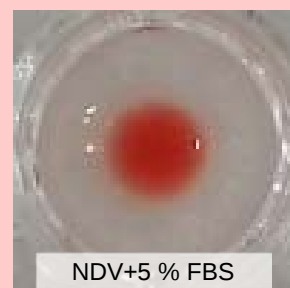


With Virus

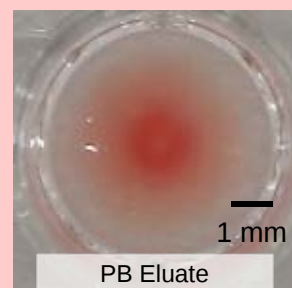


3. Experiment & Result

1. Introduce NDV(Newcastle Disease Virus) and 5 % FBS (Fetal bovine serum) suspension
2. Introduce 500 mM KCl to elute FBS proteins
3. Introduce 1 M PB (Phosphate buffer) to elute NDV
4. Hemagglutination Reaction



Negative



Positive

Success of Virus Detection

4. Conclusions

1. HA chromatography was carried out in a microfluidic chip.
2. NDVs were successfully isolated from the suspension containing 5 % FBS by HA chromatography and therefore **sensitivity of virus detection was improved.**



本研究に関するお問い合わせ先: 新美 京 (Miyako Niimi)
E-mail: miyako@biorobotics.mech.nagoya-u.ac.jp, URL: <http://www.biorobotics.mech.nagoya-u.ac.jp/>
TEL: 052-789-5220, FAX: 052-789-5027
〒464-8603 名古屋市中千種区不老町 名古屋大学大学院工学研究科 機械理工学専攻 新井研究室