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강연제목: Case Studies of Screening Aptamers and Loop-mediated Isothermal Amplification Technology for the Point-of-care Test

Abstract:

The POCT (point-of-care test) sensing that has been a fast-developing field is expected to be a next generation technology in health care. The POCT sensors for the detection of biomarkers such as proteins, small molecules and especially nucleic acids have lately attracted considerable attention.

For detection of protein or small molecules, aptamers are introduced in this presentation. Aptamers are ssDNA or RNA oligonucleotides with high affinity and high specificity to their specific targets. Because the aptamers are produced by in vitro chemical synthesis, aptamers show higher stability and almost no batch to batch variation compared to antibody.

For the development of aptamers, the method called SELEX (Systematic Evolution of Ligands by EXponential enrichment) is used.

In this presentation, some of the SELEX methods are introduced and discussed

On the other hand, for the rapid point of care diagnosis for the nucleic acid, loop mediated isothermal amplification (LAMP) is one of the most well-known molecular diagnostic methods that is rapid, and do not require any complicated equipment, which aids in cost reduction for detection of target RNA virus.

In this presentation, a primer set for RT-LAMP assay is developed for diagnosis of RNA VHSV. Under optimized condition, without the requirement of complicated equipment for heat treating, 58 fM of viral RNA was detected with fluorescently visible signals.

Brief Biosketch

Education:

- 2007.09 – 2012.08 : MS/Ph.D, Life sciences and biotechnology, Korea University, Seoul, Republic of Korea
- 1998.03 – 2006.08 : B.S, Division of Bioscience and Technology, Korea University, Seoul, Republic of Korea

Professional Experience:

- 2017.04 – 2019.05 : Project Assistant Professor / Institute of medical science, University of Tokyo, Tokyo, Japan
- 2015.07 – 2017.03 : Post doctoral researcher/ Department of chemistry, University of Tokyo, Tokyo, Japan
- 2013.06 – 2015.05 : Post doctoral researcher / Department of Biomedical Engineering, Lund University, Lund, Sweden
- 2012.09 – 2013.04 : Post doctoral researcher / Center for Theragnosis, KIST, Seoul, Korea

Research Area:

- Aptamer Screening
- Acoustophoretic Microfluidics
- Diagnostic tools (Loop mediated isothermal amplification, CRISPR diagnosis)
- Application of ssDNA aptamer