

세미나 초록

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| 성명 | 신용 |
| 소속 | 연세대학교 생명공학과 |
| 발표 주제 | Development of Molecular Diagnostics Platform & Its Clinical Applications (분자 진단 플랫폼 개발 및 임상 적용 사례) |
| 발표 내용 | <p>Medical device, especially molecular diagnostic, is defined to make immediate and informed decisions about patient for earlier diagnosis and disease management in primary care, which leads potentially to improved patient's management and outcome, cost-effectiveness, and reducing health inequalities. Diagnostic devices incorporate emerging techniques including silicon bio- photonic sensors, electrodes, and solid phase reagents that enable rapid assay reaction, reducing sample and reagent volumes, ease of use, and less technical skill. Recently, we have developed two novel techniques; a versatile dimethyl pimelimidate/thin film based sample processing (DTS) procedure as a isolation technique for nucleic acids and protein simultaneously without centrifugation step and an isothermal nucleic acids amplification/detection (iNAD) technique for the detection of biomarkers in human diseases. The DTS is useful for simultaneous isolation of nucleic acids and protein from a variety of sources, including cells, bacteria, and cancer tissues. Specifically, the DTS procedure does not require a centrifuge and has improved time efficiency (30 min), affordability, and sensitivity. We confirmed that the quality and quantity of the isolated nucleic acids and protein were sufficient to allow robust detection of biomarkers in downstream analysis. In addition, the iNAD can be performed without labeling in real-time by utilizing both silicon microring-based solid-phase amplification and isothermal recombinase polymerase amplification (RPA) within 20 min. We demonstrated that the sensitivity of the iNAD technique was 100-times higher than those of RPA and conventional PCR methods. Therefore, an integrated device of the novel techniques will be useful for diagnosis of various human diseases with simplicity, rapidity, and low-cost.</p> |