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Dual-mode SERS-based lateral flow assay strips for simultaneous diagnosis of SARS-CoV-2 and influenza a virus

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Abstract

Since COVID-19 and flu have similar symptoms, they are difficult to distinguish without an accurate diagnosis. Therefore, it is critical to quickly and accurately determine which virus was infected and take appropriate treatments when a person has an infection. This study developed a dual-mode surface-enhanced Raman scattering (SERS)-based LFA strip that can diagnose SARS-CoV-2 and influenza A virus with high accuracy to reduce the false-negative problem of the commercial colorimetric LFA strip. Furthermore, using a single strip, it is feasible to detect SARS-CoV-2 and influenza A virus simultaneously. A clinical test was performed on 39 patient samples (28 SARS-CoV-2 positives, 6 influenza A virus positives, and 5 negatives), evaluating the clinical efficacy of the proposed dual-mode SERS-LFA strip. Our assay results for clinical samples show that the dual-mode LFA strip significantly reduced the false-negative rate for both SARS-CoV-2 and influenza A virus.

논문정보

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