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Korea develops methodÃ?Â to detect COVID-19 RNAs in 30 min

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A joint Korean research team comprised of Professor Jeong Wook Lee and Ph.D. candidate Chang Ha Woo and Professor Gyoo Yeol Jung and Dr. Sungho Jang of the Department of Chemical Engineering at the Pohang University of Science and Technology (POSTECH) in South Korea have together developed a SENSR (SENsitive Splint-based one-pot isothermal RNA detection) technology that allows anyone to easily and quickly diagnose COVID-19 based on the RNA sequence of the virus.

This technology can diagnose infections in just 30 minutes. The biggest benefit is that a diagnostic kit can be developed within week even if a new infectious disease appears other than COVID-19.

The PCR molecular test currently used for COVID-19 diagnosis has very high accuracy but entails a complex preparation process to extract or refine the virus. It is not suitable for use in small farming or fishing villages, or airport or drive-thru screening clinics as it requires expensive equipment as well as skilled experts.

The POSTECH researchers designed the test kit to produce nucleic acid binding reaction to show fluorescence only when COVID-19 RNA is present. Therefore, the virus can be detected immediately without any preparation process with high sensitivity in a short time. And it is as accurate as the current PCR diagnostic method.

Using this technology, the research team found the SARS-CoV-2 virus RNA in patients in 30 minutes with high accuracy and sensitivity, and that it can be diagnosed on the spot. In addition, five pathogenic viruses and bacterial RNAs were detected which proved the kit's usability in detecting pathogens other than COVID-19. Another great advantage of the SENSR technology is the ease of creating the diagnostic device that can be developed into a simple portable and easy-to-use form.

The method allows onsite diagnosis before going to the screening clinic or being hospitalized and also allows for a more proactive response to COVID-19 by supplementing the current centralized diagnostic system.

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