

Abstract

# Military Training Dogs Sniff COVID-19 on Sweat <sup>†</sup>

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Due to the SARS-CoV-2 pandemic, there were several techniques developed for COVID-19 diagnosis such as real-time polymerase chain reaction (RT-PCR) providing high performances of sensitivity, specificity, and accuracy. Several approaches such as biological detection were alternatively developed based on rapid, effective, and non-invasive. This technique of bio-detection used military trained dogs to differentiate between infected COVID-19 patients and non-infected COVID-19 by sniffing of body odors or human sweats by trained to recognize and respond to the unique VOCs patterns of COVID-19 patients' sweat samples, which provided fast and high sensitivity results. However, potential compounds suspected to be VOCs markers that training dogs recognized from sniffing had not been clarified enough. A challenge is to identify VOCs markers that dogs recognize and differentiate for SARS-CoV-2. Gas chromatography-mass spectrometry (GC-MS) has been widely used for VOCs identification coupled with the use of headspace-solid phase microextraction (HS-SPME) as an extraction method because of its ability to directly extract volatiles without solvent consumption. Potential biomarkers can be obtained from data analysis using alignment and statistic analysis program that can categorize all identified compounds into groups. The potential markers derived from this research included nonanal, and aromatic compounds. These biomarkers' production would relate to changes in metabolism pathways in the patient's body after COVID-19 infection. The researcher anticipated that this study would have practical implications for improving COVID-19 screening by training dogs in the future.

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