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Bio-Detection Dogs Sniff COVID-19 in Thailand †

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Severe acute respiratory syndrome coronavirus (SARS-CoV-2) caused a pandemic COVID-19 disease worldwide, generating an urgent need to develop an early diagnosis approach. This work applied trained dogs to perform a sniff test for COVID-19 screening based on the detection of volatile organic compound (VOC) markers in sweat. Male and female Labrador Retrievers participated in this research as sniffer dogs. The samples were collected from the armpit sweat of PCR-positive (symptomatic/asymptomatic) and -negative patients admitted at Chulalongkorn University Hospital, Bangkok, Thailand. Two cotton rods were used to collect the samples from each patient and kept in 20 mL screw headspace glass vials closed with aluminum caps. The virus inactivation on the surface was performed under UV radiation and left at 25 °C inside a biosafety laboratory level 2 (BSL2) at Chulalongkorn University Hospital for 48 h. The cotton swabs from each patient were transferred from the glass vial into a stainless steel bottle with dimensions of 5 × 9.5 cm. The dog training process was based on positive reinforcement approaches, involving memorizing the COVID-19 positive and negative samples which were hanging in an I-shaped stand. A COVID-19 screening test evaluation (accuracy, sensitivity, and specificity) was carried out using a six-armed spinning wheel. The sniffer dogs successfully recognized VOC markers for SARS-CoV-2 patients with a success rate of 96% (n = 300). In conclusion, the COVID-19 sniffer dogs have the capability for participating in COVID-19 point-of-care testing in public areas in Bangkok, Thailand.

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Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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