Title: COVID-19 detection dogs

Theme: Phage therapy and infectious diseases
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Summary:

The COVID-19 worldwide pandemic has led to important research progress for both treating and vaccinating. However, the probably most important action to stop SARS-CoV-2 virus spreading remains testing and rapid quarantine of positive individuals, as done for any epizoonotic-widespread screening with rapid results slows down and limits the progression of the infection.

Dogs are known for that extremely sensitive olfactory system that can even detect substances at a concentration as low as 1 part per trillion (1). Humans have trained dogs for olfactory detection of explosives, illicit drugs and lots of other options including forensic purposes or search and rescue operations.

But recent researches show that there is an increased interest for the use of biodetection dogs in medical areas such as cancers identification or bacterial and parasitic infections, or alert diabetic/epileptic individuals of an upcoming crisis. It appears that dogs can detect the Volatile organic Compounds (VOCs) generated during such conditions, but in the case of microorganisms, the specificity of the induced odor still remains to discover. Early 2020, we developed in Alfort School of Veterinary Medicine (France) the Nosaïs-COVID-19 program, in collaboration with St Joseph University of Beirout (Lebanon). We then were followed by other countries that adopted our basic protocol, based on axillary sweat samples, while other countries started working on urine, saliva or exhaled air.

Olfactory detection dogs are an alternative method, for COVID-19 testing and screening, in order to detect specific Volatile Organic Compounds generated by the SARS-CoV-2 infection. Several research teams are working on the subject and already demonstrated high levels of sensitivity and specificity of the “K9 COVID-19 test”. The overall success reported by the summarized studies are comparable to the standard RT-PCR results and higher than those with antigenic tests.

Therefor, even if further researches are already conducted, correctly trained and validated dogs could be deployed to non-intrusively screen and identify persons infected with SARS-CoV-2 in mass testing or pre-testing in airports, senior care facilities, universities, public events, etc …