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CORONAVIRUS DISEASE 2019 UPDATE (37): CHINA (HONG KONG) ANIMAL, DOG, PRELIMINARY SEROLOGY NEGATIVE

A ProMED-mail post

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Source: Press release, Government of Hong Kong SAR [edited]

<https://www.info.gov.hk/gia/general/202003/12/P2020031200670.htm>

A spokesman for the Agriculture, Fisheries and Conservation Department (AFCD) said today [Thu 12 Mar 2020] that the blood test result of a pet dog which had repeatedly tested weakly positive for COVID-19 virus is negative.

The AFCD collected samples from the dog 5 times for tests since late February [2020] and detected low levels of the COVID-19 virus from its nasal and oral cavity samples. A blood sample was also taken from the dog on [3 Mar 2020] for serological testing and the result is negative. The negative result indicates that there is not a strong immune response and that there are not measurable amounts of antibodies in the blood at this stage.

The negative serological test result does not suggest that the dog has not been infected with the virus. It is known in some asymptomatic or mild cases of human infections with other types of coronavirus that antibodies may not always develop. It is also not uncommon in the earlier stages of infections to have a negative result as it often takes 14 days or more for measurable levels of antibodies to be detected (see comment). Another blood sample will be taken later for further testing.

On the other hand, the Department, together with the School of Public Health of the University of Hong Kong, has conducted gene sequencing of the COVID-19 virus found from the dog and its close contact persons who were confirmed infected. The viral sequences are very similar. The sequence results indicate that the virus likely spread from the infected persons and subsequently infected the dog.

The dog has not shown any signs of the disease related to COVID-19. It is currently under quarantine at the animal keeping facility at the Hong Kong Port of Hong Kong-Zhuhai-Macao Bridge. The Department will continue to closely monitor the dog which tested weakly positive for the COVID-19 virus and repeat the test later. It will only be returned to its owner when the test result is negative. The Department has stepped up cleansing and disinfection of the facility.

COVID-19 is a newly emerged disease and the situation is still evolving. The AFCD will continue to work together with the Department of Health in handling relevant cases.

The spokesman reminded pet owners to adopt good hygiene practices (including handwashing before and after being around or handling animals, their food, or supplies, as well as avoiding kissing them) and to maintain a clean and hygienic household environment. People who are sick should avoid contacting animals. If there are any changes in the health condition of the pets, advice from a veterinarian should be sought as soon as possible.

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[The initiative to check the potential role of animals, including company animals, in the epidemiology of COVID-19 presents a One Health approach, the need for which has been highlighted since the very initial stages of the event-to-become-pandemic in Wuhan. In this respect, the following piece of information, extracted from the 'WHO-China Joint Mission on COVID-19, 16-24 Feb 2020' (page 8, "Zoonotic origins") is noteworthy:

"COVID-19 is a zoonotic virus. From phylogenetics analyses undertaken with available full genome sequences, bats appear to be the reservoir of COVID-19 virus, but the intermediate host(s) has not yet been identified. However, 3 important areas of work are already underway in China to inform our understanding of the zoonotic origin of this outbreak.

"These include early investigations of cases with symptom onset in Wuhan throughout December 2019, environmental sampling from the Huanan Wholesale Seafood Market and other area markets, and the collection of detailed records on the source and type of wildlife species sold at the Huanan market and the destination of those animals after the market was closed."

The absence of tests from the animals on the market has been underlined in previous posts; the fact that the animals on the market were not culled has not been published hitherto. When becoming available, the collected detailed records on their sources, types, and about their respective destination(s), will be useful.

Wishfully, animal-health specialists were included among the members of the WHO Joint Mission (listed in annex A of the report which is available at <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf> (40 pages, published 28 Feb 2020).

It may be assumed that the tests applied on the serum of the COVID-19-suspected Pomeranian dog are similar to the serological tests, recently validated in China for the diagnosis of COVID-19 in humans. They were published on Wed 4 Mar 2020, in the website of the National Commission of Health; see art 5 "Diagnostic criteria", referring to tests for the detection of "COVID-19-specific IgM antibodies" and "COVID-19-specific IgG antibodies" at http://www.gov.cn/zhengce/2020-03/04/content_5486710.htm.

In a press release which followed on Thu 5 Mar 2020, it was stated that high IgM levels usually indicate a recent infection, while elevated IgG levels suggest the patient has entered the recovery stage or has completely recovered. "No matter how you cut it, if you find antibodies it proves there's been an infection". The press release is available at <https://www.caixinglobal.com/2020-03-05/latest-coronavirus-diagnostic-plan-adds-new-tests-to-beat-false-negatives-101524535.html>.

Field application of automated chemiluminescent immunoassay kit to detect serum IgM and IgG antibodies to 2019-nCoV of 736 subjects, including confirmed COVID-19 patients, non-COVID-19 fever patients, other disease patients, and medical staff as well as healthy people, has been published online, on 4 Mar 2020 (Ref 1). The authors reported that COVID-19 patients were becoming reactive (positive) for specific anti-2019-nCoV IgM antibodies from 7-12 days after the onset of morbidity, followed

closely by the IgG; that the levels of specific IgM and IgG antibodies increased with the progression of the disease, and that the trend of IgM and IgG changes in different cases was not exactly the same.

FAO and OIE currently state: "There is no current evidence of dogs playing a role in the spread of COVID-19. As a general practice, when caring for any kind of animals, always wash your hands before and after you interact with them."

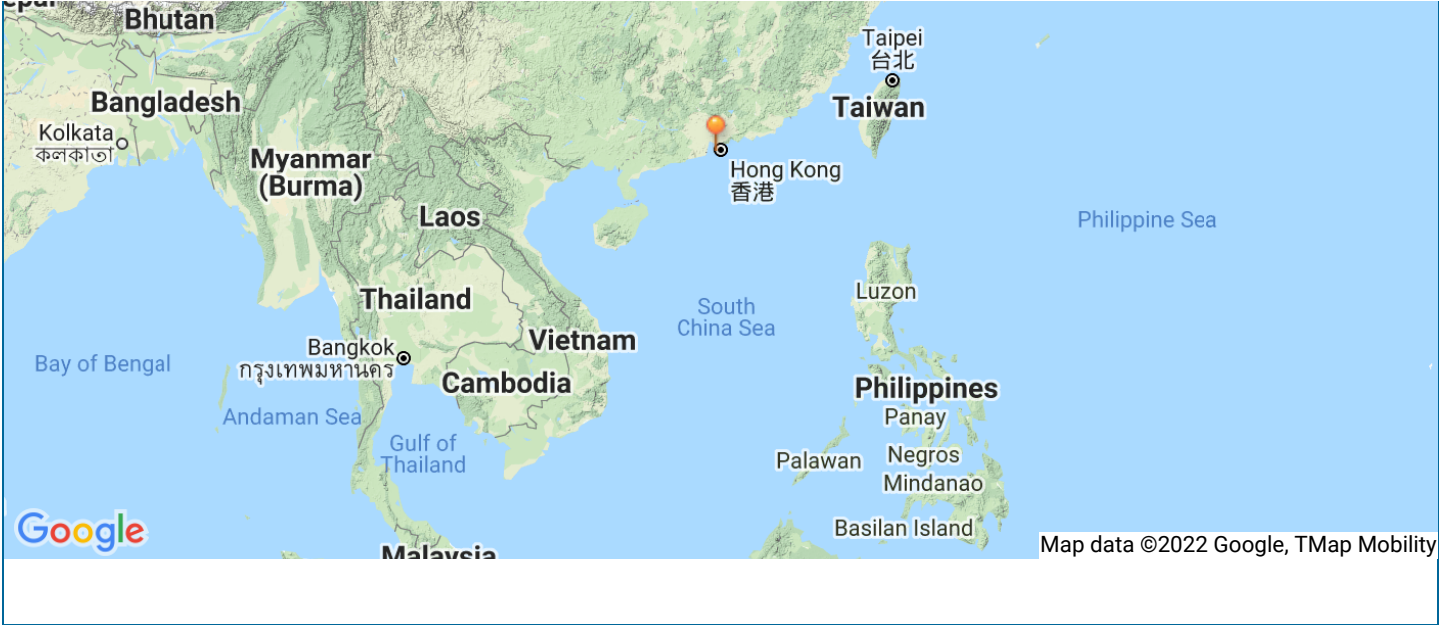
Reference

1. Zhang J, Liu J, Li N, et al. Serological detection of 2019-nCoV respond to the epidemic: A useful complement to nucleic acid testing. medRxiv preprint doi: <https://doi.org/10.1101/2020.03.04.20030916> (Not peer reviewed).
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HealthMap/ProMED map available at:
Hong Kong: <https://promedmail.org/promed-post?place=7081842,198>]

See Also

- COVID-19 update (30): China (Hong Kong) dog, susp, serology pending 20200306.7057595
- COVID-19 update (25): China (Hong Kong) dog, susp, OIE 20200302.7040373
- COVID-19 update (22): companion animals, dog susp, RFI 20200229.7036661
- COVID-19 update (17): China, animal reservoir, wildlife trade & consumption 20200225.7024245
- COVID-19 update (11): animal reservoir, intermediate hosts, pangolin susp 20200220.7009213
- COVID-19 update (08): companion animals, RFI 20200218.7002276
- COVID-19 update (06): animal reservoir, intermediate hosts 20200217.6997782
- Novel coronavirus (42): China, global, COVID-19, SARS-CoV-2, WHO 20200211.6979942
- Novel coronavirus (40): animal reservoir, pangolin poss intermediate host, RFI 20200210.6972104
- Novel coronavirus (28): China (HU) animal reservoir 20200201.6943858
- Novel coronavirus (22): reservoir suggested, bats 20200129.6930718
- Novel coronavirus (20): China, wildlife trade ban 20200127.6922060
- Novel coronavirus (18): China (HU) animal reservoir 20200125.6915411
- Novel coronavirus (15): China (HU) wild animal sources 20200123.6909913
- Novel coronavirus (03): China (HU) animal reservoir suggested, RFI 20200114.6887480
- Novel coronavirus (01): China (HU) WHO, phylogenetic tree 20200112.6885385
- Undiagnosed pneumonia - China (HU) (07): official confirmation of novel coronavirus 20200108.6878869
- Undiagnosed pneumonia - China (05): (HU) novel coronavirus identified 20200108.6877694
- Undiagnosed pneumonia - China (03): (HU) updates, SARS, MERS ruled out, WHO, RFI 20200105.6872267
- Undiagnosed pneumonia - China (01): (HU) wildlife sales, market closed, RFI 20200102.6866757
- 2019
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- Undiagnosed pneumonia - China: (HU) RFI 20191230.6864153
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