



Published Date: 2020-08-28 19:07:12 CEST

Subject: PRO/AH/EDR> COVID-19 update (379): animal, rabbit, exptl infect, Netherlands, screening

Archive Number: 20200828.7726781

CORONAVIRUS DISEASE-19 UPDATE (379): ANIMAL, RABBIT, EXPERIMENTAL INFECTION, NETHERLANDS, SCREENING

A ProMED-mail post

<http://www.promedmail.org>

ProMED-mail is a program of the

International Society for Infectious Diseases

<http://www.isid.org>

Date: Fri 28 Aug 2020 [accessed]

Source: bioRxiv preprint, posted 27 Aug 2020 [edited]

<https://www.biorxiv.org/content/10.1101/2020.08.27.263988v1.full.pdf>

ref: Mykytyn AZ, Lamers MM, Okba NMA, et al. Susceptibility of rabbits to SARS-CoV-2.

<https://doi.org/10.1101/2020.08.27.263988> [The copyright of this preprint, which was not certified by peer review, is held by the author/funder.]

Abstract

Transmission of severe acute respiratory coronavirus-2 (SARS-CoV-2) between livestock and humans is a potential public health concern. We demonstrate the susceptibility of rabbits, which excrete infectious virus from the nose and throat upon experimental inoculation, to SARS-CoV-2. Therefore, investigations on the presence of SARS-CoV-2 in farmed rabbits should be considered.

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[The authors inoculated, in the laboratories of the Erasmus University, Rotterdam, 3 rabbits with 1 000 000 tissue culture infectious dose 50 (TCID₅₀) SARS-CoV-2 for a 21-day follow-up. Additionally, 3 groups of 3 animals each were inoculated with 10 000, 100 000, or 1 000 000 TCID₅₀ SARS-CoV-2, and swabs were taken for 4 days before the animals were euthanized and autopsied. Results of viral tests, applied on sampled obtained in vivo or in vitro, are presented in detail. Animals inoculated with the lower doses presented less, shorter or no viral shedding. Despite the fact that no viral RNA was detected in the lungs, histological examination of the lungs of infected animals sacrificed 4 days post-inoculation (PI) revealed a multifocal mild to

moderate increase in alveolar macrophages in the alveolar lumina with multifocal presence of few neutrophils (additional detail in the paper; see source URL).

They concluded: "This study demonstrates that rabbits are susceptible to SARS-CoV-2. While the infection is asymptomatic, infectious virus with peak titers corresponding to about 1000 TCID50 could be detected up to day 7 PI in the nose. The minimum dose to establish productive infection was 100 000 TCID50, indicating that virus transmission between rabbits may be less efficient compared with ferrets and hamsters. The use of young, immunocompetent, and healthy New Zealand White rabbits in this study, however, may not reflect virus shedding and disease in other rabbit breeds or rabbits at different ages. Thus, surveillance studies -- including serological testing -- may be needed to assess the presence of SARS-CoV-2 in farmed rabbits."

As reported in an earlier post (ProMED-mail. COVID-19 update (169): Netherlands (NB) animal, farmed mink, spread, rabbit susp 20200509.7316646 -- see item 2), the initial findings of the experimental infection research, undertaken by Erasmus University in Rotterdam, which were indicative of rabbits being "sensitive to infection", led the Dutch Ministry of Agriculture/veterinary authorities to undertake screening for COVID-19 in rabbit farms. Details, as well as results of the tests performed on the collected samples, will be helpful. - Mod.AS

HealthMap/ProMED-mail map of the Netherlands: <https://promedmail.org/promed-post?place=7726781,104.>

See Also

COVID-19 update (376): animal, ferret, mink, comment 20200827.7721923
COVID-19 update (374): animal, ferret, research, epidemiology 20200825.7715862
COVID-19 update (366): animal, USA (UT) mink 20200818.7692815
COVID-19 update (365): Germany case data, countries, WHO, global 20200818.7690696
COVID-19 update (364): USA (NC,NY) animal, dog, comment 20200818.7689234
COVID-19 update (363): animal, Denmark (ND) Netherlands (NB,LI) mink, spread 20200817.7687830
COVID-19 update (360): USA (NC, NY) animal, dog, comment 20200815.7681907
COVID-19 update (340): animal, China, enviro monitoring, Netherlands (NB), mink 20200801.7635820
COVID-19 update (334): animal, Netherlands, mink, spread, UK, cat, 1st rep, OIE 20200727.7617582
COVID-19 update (324): Netherlands (NB) animal, farmed mink, spread 20200719.7591013
COVID-19 update (317): Netherlands (NB) animal, farmed mink, spread 20200716.7578453
COVID-19 update (307): Netherlands (NB), Denmark (ND) farmed mink, spread, control 20200708.7553067
COVID-19 update (301): Denmark (ND) Netherlands (NB) farmed mink, spread, control 20200703.7536980
COVID-19 update (284): Denmark (ND) animal, farmed mink, spread, dog 20200624.7506728
COVID-19 update (281): Netherlands (NB, LI) farmed mink, spread, animal, global 20200623.7502849
COVID-19 update (266): Denmark (ND) animal, farmed mink, 1st rep 20200617.7479510
COVID-19 update (251): Netherlands (NB, LI) animal, farmed mink, spread, culling 20200610.7453845
COVID-19 update (248): Netherlands (NB, LI) animal, mink, spread, culling, cat 20200609.7446478
COVID-19 update (236): Netherlands (NB, LI) animal, farmed mink, spread, culling 20200604.7427849
COVID-19 update (230): Netherlands (NB, LI) animal, farmed mink, spread, control 20200602.7420433
COVID-19 update (215): Netherlands (NB) animal, mink-to-human, epidem., control 20200527.7385049
COVID-19 update (209): Netherlands (NB) farmed mink, animal-to-human, cat, epid 20200525.7375359
COVID-19 update (198): Netherlands (NB) farmed mink, animal-to-human infect susp 20200520.7359976
COVID-19 update (189): Netherlands (NB) animal, farmed mink, research, cat, dog 20200517.7344274
COVID-19 update (177): Netherlands (NB) animal, farmed mink, Spain (CT) cat susp 20200512.7328587
COVID-19 update (174): Netherlands (NB) animal, farmed mink, comment 20200511.7323845
COVID-19 update (169): Netherlands (NB) animal, farmed mink, spread, rabbit susp 20200509.7316646
COVID-19 update (154): Netherlands (NB) animal, farmed mink, research 20200503.7294846
COVID-19 update (146): Netherlands (NB) animal, farmed mink, epidemiology 20200501.7286113

