

Zoonoses

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Challenge studies with West Nile virus lineage 1 and 2 in large falcons

*U. Ziegler¹, J.H. Angenvoort¹, D. Fischer², C. Fast¹, M. Eiden¹, S. Revilla-Fernández³, N. Nowotny⁴, J. Garcia de la Fuente⁵, M. Lierz², M.H. Groschup¹

¹Friedrich-Loeffler-Institut, Institute of Novel and Emerging Infectious Diseases, Greifswald-Insel Riems, Germany

²Justus Liebig University Giessen, Clinic for Birds, Reptiles, Amphibians and Fish, Giessen, Germany

³Austrian Agency for Health and Food Safety (AGES), Institute for Veterinary Disease Control Mödling, Mödling, Austria

⁴University of Veterinary Medicine, Vienna, Zoonoses and Emerging Infections Group, Clinical Virology, Department of Pathobiology, Vienna, Austria

⁵Roc Falcon S.L, Odèn (Lleida), Spain

West Nilevirus (WNV) is a zoonotic flavivirus that is transmitted by blood-suckling mosquitoes and uses birds as primary vertebrate reservoir hosts. Blackbirds, ravens and jays as well as raptors like falcons and goshawks are highly susceptible and develop deadly encephalitis while other avian species are affected only mildly or sub-clinically.

WNV lineage 1 and 2 cases were reported in Southern European countries recently. The aim of our study was to assess whether WNV lineage 1 (NY99) and 2 (strainAustria) viruses (using three different challenge doses respectively) are pathogenic for falcons. Under BSL3 conditions a total of 12 captive-bred gyr falcons and hybrid falcons (in groups of two) were challenged subcutaneously with low, intermediate or high challenge virus doses respectively. Blood samples and cloacal and oropharyngeal swabs were collected regularly and virus was detected from blood, cloacal and oropharyngeal swabs by quantitative real-time RT-PCR. Birds were necropsied after two (lineage 1) or three (lineage 2) weeks. Clinical signs were rather subtle and diverse in most animals, although pathological changes were quite severe. Viremia and virus shedding started after the second day and lasted at least for one week, if not longer. Antibodies against WNV were detected by ELISA and neutralization assays from 6 dpi on.

The investigations prove that large falcons are susceptible to WNV of both lineages and shed virus via oral and fecal routes for long periods of time. As falcons are competent WNV amplifying hosts, they can therefore play an important role in the transmission cycle of this zoonotic disease.

Corresponding author:

Ute Ziegler

ute.ziegler@fli.bund.de