

OP-D03. SEROLOGICAL INVESTIGATION OF USUTU AND WEST NILE VIRUSES IN WILD AND DOMESTIC BIRDS IN NORTHWESTERN ITALY, 2012-2014

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Usutu virus (USUV) and West Nile virus (WNV) are emerging pathogens that belong to the Japanese encephalitis virus antigenic complex of the family *Flaviviridae*, genus *Flavivirus*. Both viruses are maintained in the environment through a bird-mosquito life cycle, and mammals including humans are so far regarded as incidental or dead-end hosts. In the recent years, human neurological disease cases, due to USUV and WNV, have been reported in many parts of Italy and Europe confirming the zoonotic potential of these viruses. Migratory birds are considered to be the main source for introduction of USUV and WNV from Africa to the European countries.

A sero-survey on wild and domestic birds was carried out between March 2012 and October 2014 to investigate the circulation of both viruses in Piedmont region (Northwest Italy). Samples belonging to 87 different bird species and 14 orders have been collected covering a vast part of the study area. Birds were sampled in three wildlife rehabilitation centers, three farms and in the frame of ringing campaigns conducted by volunteer-based networks in locations with a high concentration of migratory birds. In particular, 871 and 790 serum samples were tested for the presence of anti-USUV and anti-WNV specific antibodies, respectively, by serum-neutralization (SN) assay. Nine of 871 serum samples had neutralizing antibodies against USUV (P= 1.03%, IC 95% 0.47-1.95), while 15 of 790 samples tested positive for WNV (P= 1.89%, IC 95% 1.06-3.1). Neutralizing antibodies for WNV were significantly more prevalent (p<0.001) in trans-Saharan migrants (P=9%, IC 95% 4.1-16.3) than in resident and short-distance birds, but no migratory habit-related differences were found for USUV. Neutralizing antibodies for WNV were also significantly more prevalent (p<0.001) in raptors (Strigiformes and Falconiformes orders) (P=10.1%, IC 95% 4.7-18.3) than in the other orders. Antibodies in resident bird species suggest that both viruses are circulating in NW Italy. Results show that voluntary networks can be an effective complement of official surveillance protocols for the USUV and WNV early detection infections in wild birds, providing a large number of samples and reducing the costs and the labor-intensive actions specifically targeted to human health protection.