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Role of preen oil in survivability of highly pathogenic H5N1 avian influenza virus in duck feathers

C K Athira
Indian Council of Agricultural Research, India

Grooming with preenoil is the simplest and most common natural feather caring activity. In order to elucidate the role of preen oil in survivability of H5N1 virus in feathers, we investigated the viral survivability in the untreated duck feathers; duck feathers after physically removing preen oil; emu feathers and day old duckling feathers (which are known to be devoid of preen oil). After spiking with the virus at two concentrations, (10^4 EID_{50} and 10^6 EID_{50}), the samples were stored at 37°C, 25°C and 10°C and tested every 24 hours for the presence of virus by its isolation in embryonated chicken eggs and viral RNA quantification by Real time Reverse Transcriptase PCR. Mean persistence of H5N1 AIV in duck feathers containing preen oil at 10^4 EID_{50} and 10^6 EID_{50} spiked viral concentrations was 19.8 and 29.7 days at 37°C; 30.7 and 44.7 days at 25°C and 55.8 and 73.3 days at10°C, respectively. In case of the treated duck feathers after extracting the preen oil at 10^4 EID_{50} and 10^6 EID_{50} spiked viral concentrations, the mean viral persistence observed was 9.7 and 14.5 days at 37°C; 16 and 25.3 days at 25°C and 35 and 48.3 days at 10°C, respectively. In emu feathers, the mean viral persistence observed at 10^4 EID_{50} and 10^6 EID_{50} spiked viral concentrations was 5 and 6.7 days at 37°C; 13.7 and 17 days at 25°C and 29.2 and 38.3 days at 10°C, respectively. In case of the feathers from day old ducklings, at 10^4 EID_{50} and 10^6 EID_{50} spiked viral concentrations, the mean viral persistence observed was 7 and 8.7 days at 37°C; 14.3 and 17.7 days at 25°C and 31.7 and 41.6 days at 10°C, respectively. Amongst the four different samples, viral RNA concentration was found to be highest in untreated duck feathers indicating an importance of preen oil in adsorption of the virus particles. The study showed that preen oil present in the feathers play a major role in increasing the survivability of avian influenza virus even at higher temperatures on surface of feathers.

Biography

C K Athira is currently pursuing PhD in Veterinary Public Health at Indian Veterinary Research Institute, UP, India. She has submitted thesis with the title "Role of preen oil in persistence of H5N1 Avian influenza virus in duck feathers".

dr.athirack@gmail.com

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