SURVEILLANCE OF AVIAN INFLUENZA IN THE LIVE BIRD MARKETS OF PERU

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BACKGROUND

Live-bird markets are common in almost every major city throughout Peru. In these settings, the mixture of highly stressed domestic and wild birds kept in unsanitary and over-crowed conditions may lead to enhanced transmission of a variety of diseases including avian influenza (AI) (1). Although to-date no outbreaks of AI poultry have occurred in Peru, low pathogenic AI viruses have been isolated from migratory birds along the Peruvian coast (2). Avian disease surveillance by the Ministry of Agriculture in Peru is restricted primarily to large-scale domestic poultry operations. Currently, surveillance of live birds in local markets is insufficient. Our goal is to monitor and identify pathogens circulating among caged birds in live-bird markets throughout Peru.

METHODS

Study Sites

A total of 12 markets in seven cities of Peru were selected for sampling (Figure 1). Selection was done based on the presence of wild-caught birds or backyard poultry for sale. Live birds are sold in market stalls in the food sections of all the markets but one. Trade in wild-caught native species in Peru is illegal, therefore birds confiscated by the local authorities were also sampled.

Sampling Procedure

Since March 2007, bird sellers were contacted and asked if they would like to voluntarily participate in the study. Caged bird populations at each market were counted, species were recorded and husbandry practices were noted.

Oral and cloacal swabs were collected from manually restrained birds with a sterile tipped applicator and placed in viral transport media (Figure 2)(3). Fresh fecal sample swabs were obtained from birds of small body size and from birds which we were unable to handle. Swabs were collected from one bird per species per cage at each market stall. Samples were collected on an annual basis from each market stall.

Virus Isolation

Samples were processed in the Avian Pathology Laboratory at San Marcos University, Lima, Peru. Virus isolation was conducted using standard methods (4). Five to 8 samples were pooled based on date, species and city. Pooled samples were well mixed, sterile filtered (0.45μm syringe filter) and inoculated into five 9-day-old SPF eggs. After 5 days, allantoic fluids were tested for evidence of haemagglutination.

AI isolation in cell cultures was attempted at NMRC, Lima from individual samples collected during the first year. One aliquot of each sample was submitted to the National Service of Animal Health in collaboration with the National Program of Avian Health (SENASA/PRONASA).

RESULTS

We achieved a seller participation rate of 60 – 100% among all markets sampled. A total of 1387 birds, representing 72 avian species (10 orders, 19 families, Table 1), were sampled. During the sampling period, through November 2nd 2009, no AI strains have been isolated among the 892 samples tested at San Marcos University. Another 495 samples are still pending processing. No isolations were obtained from the 562 samples inoculated in cell cultures at NMRCD.

DISCUSSION & CONCLUSIONS

To-date, we have found no evidence of AI circulating among birds sampled from the selected live bird markets in Peru. Nonetheless, an extensive trade in wild-caught native species and backyard poultry has been recorded throughout the study area. This trade includes a large number of wild and domestic species and involves a considerable number of people. A more in depth assessment of bird traders’ disease prevention practices and enhanced surveillance activities is needed in Peruvian bird markets.

REFERENCES