

A PRELIMINARY REPORT ON THE SURVEILLANCE OF HIGHLY PATHOGENIC AVIAN INFLUENZA (H5N1) AND NEWCASTLE DISEASE (ND) VIRUSES IN EDIBLE BIRD NEST SWIFTLET (*Aerodramus fuciphagus* and *Aerodramus maximus*)

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ABSTRACT. The emergence of Highly Pathogenic Avian Influenza (H5N1) in 2004 draws attention to the safety of rearing edible bird nest swiftlets within the vicinity of human dwellings in urban areas. There is also concern on the safety of the product itself. Convenient sampling of edible bird nest swiftlets (*A. fuciphagus* and *A. maximus*) was conducted by the Department of Veterinary Services and Animal Industry from September 2004 until June 2011. A total of 137 samples were collected from four premises and two natural caves in four locations, namely Tawau, Kunak, Sandakan and Penampang. The samples were collected for Egg Inoculation Tests for H5N1 and Newcastle Disease (ND). All samples yielded negative results for both diseases.

Keywords: H5N1, ND, EBN swiftlets, caves, surveillance

INTRODUCTION

Sabah, “The Land Below The Wind”, is bestowed with many natural resources of flora and fauna, forests, streams, rivers

and insects. These pristine factors provide a conducive and prime environment for the survival of edible bird nest (EBN) swiftlets. This EBN swiftlet industry contributed more than RM13.3 million to the economy of the state through the export of 8,876 kg of EBN products in 2009 (Anon, 2009). The main markets for EBN products are Hong Kong and China.

The major producers of EBN from natural caves are found in the Gomantong and Madai caves (Photos 1 and 2), respectively located in Sandakan and Kunak districts. Ambu (2009) estimated that the swiftlet population in both the Gomantong and Madai caves was 1.29 million and 0.8 million heads respectively. However, EBN production from ranched population is unknown. It is estimated that there are about 500 man-made EBN swiftlet houses (Photo 3) in Sabah. However this figure is dynamic and fast changing due to increasing interest in this high value industry.

The emergence of H5N1 in late 2004 around the world draws much concern in this industry, bringing doubts about



Photo 1. Gomantong Cave



Photo 2. Madai Cave



Photo 3. Swiftlet house



Photo 4. Live bird caught



Photo 5. Tracheal swab



Photo 6. Swabs in TPB



Photo 7. Foecal swab



Photo 8. Egg inoculation

the safety and possible transmission of the disease from swiftlets to human population. Although studies on H5N1 in poultry populations have been extensively conducted by the DVSAI in Sabah which hitherto has been free of the disease, no studies on swiftlets have been attempted. This paper describes the results of the surveillance of H5N1 and ND in swiftlets over the period of September 2004 to June 2011.

MATERIALS AND METHODS

Live birds (Photo 4) were caught using mist nets from the Gomantong and Madai caves where EBN has been traditionally harvested for commercial purposes. Tracheal and cloacal swabs were subsequently taken from these live birds (Photo 5). Five

to ten tracheal swabs were pooled and inoculated into Tryptose Phosphate Broth (TPB), maintained at 2°C to 8°C (Photo 6). This procedure was similarly done for the cloacal swabs collected. However in EBN ranches or premises where live birds are rarely allowed to be manipulated, foecal swabs were taken from the premises and either singly or pooled into TPB (Photo 7). Nevertheless where swiftlets were also available in these ranches or premises, tracheal and cloacal swabs were concurrently taken. The samples were later inoculated into fertilised eggs for viruses isolation as recommended by OIE (2004) for both the H5N1 and ND viruses (Photo 8).

A summary of samples collected for the surveillance is shown in Table 1.

Table 1. Distribution of swiftlet samples collected for the H5N1 and ND surveillance in Sabah from September 2004 till June 2011.

PREMISE TYPE	LOCATION	SPECIES	TYPE OF SAMPLES [SWABS]			Total swabs for egg inoculation
			Trachael	Cloacal	Faecal	
Ranched	Pertama Commercial Centre, Apas Road, Mile 1.5, Tawau.[shop lots]	<i>A. fuciphagus</i>	2	2	0	4
	Jln Dunlop, Tawau. [Shop lots]		1	1	0	2
	Kg.Tindai Kolopis, Penampang. [Free standing buildings - 2 houses]		4	0	11	15
Simud Putih, Gomantong Cave, Sukau, Sandakan	11		11	0	22	
Caves	Simud Putih, Gomantong Cave, Sukau, Sandakan	<i>A. maximus</i>	29	29	0	58
	Madai Cave, Kunak		18	18	0	36
			65	61	11	137

RESULTS

The result of 137 samples taken and tested for H5N1 and ND is shown in Table 2. All the samples collected in the study did not show the presence of either the Highly Pathogenic Avian Influenza (H5N1) or the Newcastle disease (ND) viruses.

DISCUSSION

This preliminary study is indeed an excellent indication that EBN swiflets in both cave and farmed environments collected in Sabah are free from both the H5N1 and ND viruses. Although only convenient samplings were taken, the localities *viz.* the Gomantong and Madai

caves chosen are very representative since these sites cover a wide span of the total bird population in Sabah, and have traditionally remain the main sources of EBN harvests.

Swiflet farming continues to attract investments in the millions in Sabah (Ongkili, 2011) and hence the number of man-made or ranched swiflet farms will inevitably continue to increase in view of the lucrative income from this industry. This thus calls for further comprehensive studies on the presence of any other infectious agents in these birds and products. Caves and farming premises must continue to be monitored and good animal husbandry practices must be advocated to ensure the production of safe EBN.

Table 2. Result of egg inoculation for H5N1 and ND viruses from EBN swiflet samples.

PREMISE TYPE	TYPE OF SAMPLES [SWABS]	NO. OF SAMPLES	RESULT OF EGG INOCULATION FOR H5N1 AND ND VIRUSES
Ranchd	Trachael	7	No virus isolated
	Cloacal	3	No virus isolated
	Faecal	11	No virus isolated
Caves	Trachael	58	No virus isolated
	Cloacal	58	No virus isolated
	Total	137	

REFERENCES

1. Ambu L. N. (2009). The salient aspects of Conservation and Management of White-nest swiftlet (*Aerodramus fuciphagus*) in Sabah Malaysia. PhD dissertation. Oxford University/Isles International University Commonwealth, United Kingdom.
2. Anon. (2009) Annual Report – Veterinary Public Health Division, Department of Veterinary Services and Animal Industry. (Unpublished – In Malay)
3. OIE (2004). Manual of diagnostic tests and vaccines for terrestrial animals (mammals, birds & bees), Vol. 1, 5th edition. http://www.oie.int/doc/en_document.php?numrec=3667503
4. Ongkili, M. (2011) RM10m invested in Kota Marudu swiftlet farming. <http://www.mysarawak.org/2011/07/08/rm10m-invested-in-kota-marudu-swiftlet-farming.html>

ACKNOWLEDGEMENTS. The authors would like to express sincere appreciation to Kamarudin Bin Md. Isa, Azri Bin Adzhar and Helen Mitin from the Department of Veterinary Services, Malaysia; Assis Kamu from Universiti Malaysia Sabah as well as Nasip Eli, Maria Kisse, Kennedy Juani and staff members of the Veterinary Diagnostic Laboratory at Kepayan and Tawau (DVSAI) for their guidance, advice and cooperation rendered during the whole period of the study. Thanks are also due to all the members of staff of the Wildlife Department of Sabah involved in assisting the collection of swiftlets samples.



Map of Sabah