Indian J. Anim. Hlth. (2017), 56(1) : 95-98

Short Communication

SERO-SURVEILLANCE OF NEWCASTLE DISEASE VIRUS IN KUROILERS AND INDIGENOUS BIRDS IN DARJEELING DISTRICT

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Kuroilers are semi-synthetic, dual purpose breed of birds with higher productivity than indigenous breeds and are commonly reared in hilly area like Darjeeling district of West Bengal. The present study was intended to detect the sero-prevalence of Newcastle disease virus in kuroilers and indigenous birds in Darjeeling district of West Bengal. The serum samples from kuroilers (n=10) and indigenous birds (*Deshi* or non-descript chicken, n=17) were collected from different regions of Darjeeling district following the standard procedure. Unvaccinated birds were selected for the study. An indirect ELISA was performed by using a kit for detection of NDV antibodies following the manufacturer's instructions. In total, 22 samples (22/27, 81.4%) (8 from Kuroiler and 14 from indigenous birds) showed the antibody titer above the cut off value which was considered as positive as per the manufacturer's instruction.

Key words: Kuroiler, Newcastle disease, Seroprevalence, West Bengal

Newcastle disease virus (NDV) belongs to the *Avulavirus* (Avian Paramyxovirus-1) genus within the *Paramyxoviridae* family in the order Mononegavirales. The genome of NDV comprises of the genes which encode nucleocapsid protein (NP), phosphoprotein (P), matrix protein (M), fusion protein (F), hemagglutinin-neuraminidase (HN) and polymerase protein (L). Among them, fusion protein and hemagglutinin proteins can produce neutralizing antibodies from 6-10 days of

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Table1. Detection of antibody titer in indigenous and kuroiler birds against Newcastle disease virus

Samples	S/P Ratio	Conclusion
K8	1.242	Positive
IB3	1.054	Positive
IB 1	0.933	Positive
K1	0.757	Positive
K9	0.824	Positive
IB 10	0.775	Positive
IB 2	0.690	Positive
K2	1.206	Positive
K10	1.363	Positive
IB 9	1.242	Positive
IB 2	0.690	Positive
K3	0.133	Suspected
IB 7	O.200	Positive
IB 8	0.073	Negative
IB 13	0.O54	Negative
K4	1.648	Positive
IB 6	1.760	Positive
IB 11	1.642	Positive
IB 1	1.527	Positive
K5	0.982	Positive
IB 4	1.048	Positive
IB 12	0.903	Positive
K6	0.648	Positive
IB 5	0.806	Positive
IB 3	0.648	Positive
K7	0.009	Negative
IB 4	0.103	Negative

K: Kuroilers; IB: indigenous birds

infection which reaches at peak level in about 3-4 weeks (Chandra *et al*., 2014). Detection of NDV antibodies by ELISA is considered as a useful diagnostic tool as it can detect the antibodies against variety of antigens and it is not restricted against HN protein only like haemagglutination inhibition test (OIE, 2008). The reports of NDV infection in poultry, ducks, captive psittacine and passerine birds are available from different states of India (Roy *et al*., 1998, 2000, 2005). In West Bengal, prevalence of NDV was reported from Medinipur district (Dana *et al.,* 2000) and Sundarban area of South 24 Parganas district (Raja *et al.,* 2012).

However, NDV exposure in kuroilers and indigenous birds in West Bengal is still unexplored. Kuroilers are semi-synthetic, dual purpose (egg and meat type) breed of birds with higher productivity than indigenous breeds and are commonly reared in hilly area like Darjeeling district of West Bengal. The birds are successfully reared in backyard system because they can easily scavenge the food like the indigenous birds (Ahuja *et al*., 2008). The present study was intended to detect the sero-prevalence of NDV in kuroilers and indigenous birds in Darjeeling district of West Bengal.

The serum samples from kuroilers (n=10) and indigenous birds (*Deshi* or non-descript chicken, n=17) were collected from different regions of Darjeeling district (West Bengal) following the standard procedure (Table 1). Unvaccinated birds were selected for the study. An indirect ELISA was performed by using a kit (X-Ovo Diagnostic Solution, UK) for detection of NDV antibodies following the manufacturer's instructions. The plate was read by using ELISA plate reader at 550nm (ECIL, India).

In total, 22 samples (22/27, 81.4%) (8 from Kuroiler and 14 from indigenous birds) showed the antibody titer above the cut off value which was considered as positive as per the manufacturer's instruction (Table 1). Higher prevalence of NDV antibody was also detected in indigenous birds in Nigeria (52.5%-83.4%), West Indies (61.5% to 71.1%) and Zambia (48.3%-82.6%) (Ohore *et al*., 2002; Musako, 2012 and Sharma *et al*., 2015). Earlier studies in West Bengal revealed NDV as major etiology of morbidity and mortality among Deshi chicken flocks (Dana *et al*., 2000 and Raja *et al*., 2012). However, seroprevalence of NDV in indigenous (Deshi) and kuroiler birds from West Bengal or other parts of India is apparently not available to compare the present finding. The higher seroprevalence of NDV antibody indicates the exposure of the birds to the infection as the owners did not vaccinate.

ACKNOWLEDGEMENTS

The authors provide sincere gratitude to the Honourable Vice Chancellor, West Bengal University of Animal and Fishery Sciences for all the necessary facilities.

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Article received on 28.01.2017 and accepted for publication on 01.04.2017