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SEROLOGICAL AND VIROLOGICAL STUDY OF NEWCASTLE DISEASE IN BACKYARD POULTRY PRODUCTION, ETHIOPIA

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Abstract:

A cross-sectional survey was conducted to determine the prevalence of Newcastle disease (ND) in backyard poultry production kept in Ada'a and Adami Tulu Jido Kombolcha(ATJK) *Woredas* of Eastern Shoa Zone of Oromia region. Multistage cluster sampling was used to get different sampling units (*Kebele*, *Garee/Village* and households-HH) selected randomly and HHs were considered the unit of interest. For virological study six markets were strategically selected from each *Woredas*. In total 1018 chickens from 260 HH (52 *Garees*) were sampled. Additionally, swab samples from 722 Chickens were collected from markets during three consecutive months (June, July, and August) of year 2009. Serum samples and swabs were tested using haemagglutination Inhibition (HI) tests and Reverse Transcriptase Polymerase Chain Reaction (RT_PCR) for ND virus genome detection, respectively. The animal level sero-prevalence of ND was found to be 7.7 % (95%CI: 1.7-13.7). Fifty eight of 260 household had at least one sero-positive chicken. About twenty two percent (95%CI: 3.2-40.5) and 14% (95%CI: 6.8-33.7) of the HH were found to be positive for NDV in HI tests and qRT_PCR, respectively. Across the study *woreda* there is no significant difference ($P>0.05$) in terms of HH affected but between areas within the *Woredas*. The HI and RT_PCR findings for positive HH results is not well correlated (only about 3% matching for positive results) such that in *Kebeles* where higher number of positive HI titer were recorded the RT_PCR analysis detected less pool as positive for F-gene of NDV and vice versa. At the markets sampled overall bird level prevalence of 4.8% was recorded for NDV genome where highest prevalence was recorded during the months of August (9.48%). The epidemiological implications of those findings were discussed.

Key words: ND, Oromia, household, market, HI, RT_PCR