J Biotechnol Biomater 2018, Volume: 8
DOI: 10.4172/2155-952X-C3-095

Molecular characterization and monitoring of avian paramyxovirus type 1 in poultry of Libya

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Avian paramyxovirus-1 (APMV-1) is the causative agent of Newcastle disease which affects many species of birds leading to high mortality and heavy economic losses among poultry industry worldwide. On March 2013, the Libyan poultry industry faced severe outbreaks caused by Newcastle disease. APMV-1 was isolated and characterized. Following detection of the virus in allantoic fluid by rRT-PCR, genetic sequencing of the APMV-1/chicken/Libya/13VIR/7225-1/2013 isolate revealed the presence of a velogenic APMV-1 belonging to lineage five (GRRRQKR*F Lin.5) or genotype VIII in class II, according to the nomenclature in use. The use of live attenuated and inactivated vaccines in commercial poultry had significantly reduced the impact of the disease. Another Newcastle disease outbreak emerged on March 2015 in backyard chickens. Two viruses were detected in cloacal swabs namely APMV-1/Libya/15VIR5368/2015 and APMV-1/Libya/15VIR5371/2015. Genetic sequencing of these viruses revealed the presence of velogenic APMV-1 genetically similar to the virus isolated on 2013. During the same period, neurologic signs and mortality were noticed in pigeons. Samples of brain tissue were tested by rRT-PCR which revealed presence of velogenic APMV-1 belonging to lineage 4A (GKKRKR*F Lin.4A). To the best of our knowledge, this is the first report about the detection and molecular characterization of APMV-1 in pigeon in Libya. The phylogenetic analysis of the F gene showed 86% identity to isolates from Iran and Egypt. This study may indicate the circulation of APMV-1 within backyard birds and pigeons which may present a threat to commercial poultry. Considering these findings, vaccination of backyard birds and pigeons is strongly recommended.

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