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Experimental trials evaluating mutation evolution of local H5N1 avian influenza classical strain propagated in different avian host.

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English Abstract

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English abstract	current study was tried to evaluate genetic mutation and evolution for eight segment genes of Egyptian H5N1 avian influenza classical strain clade 2.2.1.2 experimentally propagated in 10th passages at different avian host such SPF chicken and different duck species (Pekin and Muscovy), In the current study, results were found Pekin ducks show neither clinical signs, mortality nor virus shedding. In a deep genetic analysis of segment 1 (PB2). on the other hand, sequencings result of segment 2 (PB1) genes were found in the 10th passage in Muscovy ducks' substitution from K (lysine) polar basic amino acid to G (glycine) neutral nonpolar at position 57, also at position 215 substitution from K (lysine) polar basic to R (arginine) polar basic, also at position 363 substitution from K (lysine) polar basic to R (arginine) polar basic. from Genetic analysis of (HA) revealed that point and silent mutations at nucleotide sequence of 10th passage in SPF chicken.in NP analysis of 10th passage from Muscovy duck a significant substitution amino acid at position 210 from R (arginine) polar basic amino acid to Q (glutamine) polar neutral. In deep analysis sequencing of segment 6 (NA) in the Current study shows amino acids substitution at residues position 41 from (R) arginine to (G) glycine in the 10th SPF chicken passage, substitution at 228's

	position from serine (S) to asparagine (N), substitution from asparagine (N) to aspartate (D) at position 46, substitution from isoleucine (I) aliphatic AA to valine (V) aliphatic AA at position 235. NS1 genetic Analysis revealed mutation in the 10th passage from SPF chicken substitutions in C-terminal 'effector' domain at position 107 from alanine (A) is an aliphatic amino acid to threonine (T) is sulfur-containing or have amide group and at 148 position from glutamate (E) to aspartate (D). So, we concluded from this study that serial passaging of HPAI (H5N1) virus in chicken host Led to mutations in NA protein that may play a role in facilitating viral entry and release, alter replication, transmissibility, and susceptibility to antiviral especially to oseltamivir resistance. Also, mutations in NS1 protein may play a role in antagonize the induction of interferon alpha and beta produced by host cells and important role in host range and virulence in chicken, alter viral replication, transmissibility, and susceptibility to antiviral inhibitors. On the other hand, the conclusion from serial passaging of HPAI (H5N1) virus in Muscovy duck led to mutations in NP protein may affecting viral transmissibility, polymerase activity in mammalian cells, and affect replication especially at low temperatures. Also, mutations in PB1 may play role in increasing pathogenicity, virulence, and cell apoptosis.
Key words	influenza H5N1, Gene Mutations, pekin Ducks, Muscovy ducks NP, NS1, PB1, NA

Table of Contents

List of tables

List of figures