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Virological Studies on equine herpesvirus-1 and 4 in Arabian and foreign horses

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A soft-focus photograph of two horses, one white and one brown, standing in a grassy field. The white horse is in the foreground, and the brown horse is slightly behind it. The background is a blurred green field with some trees in the distance.

Dedication

*To My Father, Mother,
My partner, Kids and my
best friends*

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Abstract

A preliminary field-based investigative study was conducted for screening, possible detection and determination of presence of equine herpes virus-1, 4 and their antibody prevalence in blood sera collected from 230 adult and an aborted fetus of Native, Arabian and foreign horses in Qatar and Egypt. Using commercial kits, 99% (120 out of 121) of the screened serum samples belonging to the Qatari horses seroconverted to either EHV-1 or EHV-4 types. Of the total positive, 100% were anti-EHV-4 antibody positive versus 16% anti-EHV-1 antibody positive. All of the anti-EHV-1 antibody positive sera were also anti-EHV-4 antibody positive. Interesting enough, only 0.06% of the antibody positive serum samples were recorded originating from horses of a previous history of vaccination against the two viruses. None of the 49 corresponding peripheral mononuclear cells, randomly selected from 3 ELISA positive groups were *real time* PCR positive for either specific EHV-1 or 4 specific primer sets.

Screening results against total anti-EHV-1, 4 antibodies of the 109 Egyptian horses sera indicated positive anti-EHV 1, 4 antibodies in 21%. While 65% of the positive samples were originating from vaccinated horses, 35% were not.

A liver specimen out of 12 tissue samples originating from EHV-1, 4 suspected cases retrieved EHV-4 cDNA equivalent to 580bp viral glycoprotein B specific primer sets using nested-PCR assay. The strain was designated EHV-4 VRLCU-412-2015. Sequence analysis of 450bp of the amplified fragment for phylogenetic tree construction revealed 100% compatibility with six of year 2011 EHV-4 the Turkish GenBank reference isolates. Based on the epidemiology of EHV-1 and 4, their infection and pathogenic potentialities, the humoral immunity threshold of the positive sera, the molecular analysis and the natural habitat of the candidate horses; the obtained results infer previous natural exposure to EHV with possible circulation of EHV-1 and 4 among these horses.

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"Praise to Allah, who has guided us to this; and we would never have been guided if Allah had not guided us."

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Arabic Summary

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