***In Silico* Design of Epitope Based Peptide Vaccine against Virulent Strains of HN-Newcastle Disease Virus (NDV) in Poultry Species**

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ABSTRACT

Newcastle disease virus (NDV) belong to the family Paramyxoviridae. It caused *Newcastle disease which is mainly cause by the* virulent strains of avian paramyxovirus serotype-1 (AMPV-1.). This virus represents a huge problem on the world's economy than any other animal virus, especially in developed countries. ND infection is not obstructed as well as virus shedding and many studies have attributed the spread of the disease to changes in the genome of the virus and emersion to new strains. we aimed to design a peptide vaccine for NDV particularly for the haemagglutininneuraminidase protein (HN) using computational methods to predict epitopes inducing immune system and can be used later to create a new peptide vaccine could replace on conventional vaccines. A total of available 60 virulent strains of HN- NDV were retrieved from NCBI for bioinformatics analysis using Immune Epitope Data Base (IEDB) to predict B and T cells Epitopes. We used human MHC class I and II alleles in this study due to the difficulty to determine MHC B complex alleles in Poultry then we docked the best predicted them with B-F alleles (BF2*2101 and BF2*0401). Four CTL cell epitopes namely (^{548}ISNTLFGEF^{556}, ^{546}AEISNTLFG^{554}, ^{88}VALESPLAL^{96} and ^{526}YTTSTCFKV^{534}) will able to interact with MHC class (B-F) I alleles and we suggested becoming universal peptide based vaccine against NDV. We suggested these CTL epitopes T helper epitopes also. The overlapping between MHC class I (B-F) and (B-L) II T cell epitopes suggesting the possibility of antigen presentation to immune cells via both MHC class I and II pathways especially the overlapping between ^{548}ISNTLFGEF^{556} and ^{546}AEISNTLFG^{554}. We considered this study distinctive because no research ever dealt with peptide based vaccine on virulent strains of NDV using in silico approach.

Biography

Marwa Mohamed Osman was awarded MS.c. degree at the age of 30 years from Sudan Academy of Sciences. She is an Associate Researcher at Africa city of Technology,Sudan-Khartoum. She has published 3 papers and has more than 10 papers (under submission) in word renowned journals. She has been member of American society of Clinical Pathology (ASCP^{i}) as International Medical Scientist.

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