INACTIVATION OF INFLUENZA VIRUS BY DIETHYLPYROCARBONATE

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Influenza is a viral infection of the respiratory tract that affects millions of people annually. The influenza virus is a lipid-enveloped virus that belongs to *Orthomyxoviridae* family. Its genome is a segmented, single-stranded negative-sense RNA. The virus possesses two major glycoproteins, namely, hemagglutinin (HA) and neuraminidase (NA). The former mediates virus infection by inducing membrane fusion at the acidic environment of endosomal compartment. Membrane fusion is extremely pH-dependent and its efficacy is higher at pH 5,8. This acidic environment induces a conformational change in HA leading to exposure of the fusion peptide. In the present work we argued whether histidine (His) protonation would contribute to this change in conformation in HA. To tackle this problem, we have been using diethylpyrocarbonate (DEPC). DEPC modifies the nitrogen atom of imidazole ring of His forming N-carbethoxyhistidyl derivatives. Our data showed that His residues of influenza virus were successfully modified by DEPC as measured by the absorption at 240 nm associated with the formation of N-carbethoxyhistidine. The infectivity, hemolytic activity and hemagglutination were severely reduced in the DEPC-modified-virus as compared to the control. These data suggest the importance of His residues to the process of infection. Fusion assays, intrinsic fluorescence measurements and electron microscopy are being performed to furnish additional information about DEPC modification. These data open new avenues to the use of DEPC to inactivate influenza virus, which is responsible to the avian flu nowadays.