

Krongkaew Navakul 2010: Effect of Antigenic Site Mutation on Cell Receptor Binding of Influenza A virus (H5N1) Hemagglutinin. Master of Science (Chemistry), Major Field: Chemistry, Department of Chemistry. Thesis Advisor: Assistant Professor Chak Sangma, Ph.D. 120 pages.

Hemagglutinin (HA) is an antigenic glycoprotein found on the surface of avian influenza, responsible for binding the virus to sialosaccharides on host cell surfaces. It facilitates the release of progeny viruses from infected cells. Previous study revealed that mutations along the protein loop 130 (H5 numbering) are important for host cell selectivity of HA (Auewarakul et al.,2007). In other HA subtype, beyond residue 137, this loop is also an antigenic site. Interestingly, in swine influenza A virus (H9/Swine), this antigenic site is absent and, coincidentally human and avian receptor can bind with the H9 HA. This work studied whether or not this loop deletion or mutations could cause the change in host type selectivity in avian influenza. Molecular dynamics simulations were used to build H5 HA model from the sequences where amino acids were removed or changed between residues 137 and 141. The result showed more selectivity toward human cell receptor if certain mutation of this loop occurs.

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