

PROCESS DEVELOPMENT OF CHROMATOGRAPHY-BASED PURIFICATION ON PANDEMIC INFLUENZA VIRUS-LIKE PARTICLE BASED VACCINES

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Key Words: Virus-like particles (VLPs), Avian influenza virus

Since 2013, the H7N9 avian influenza virus is considered a threat to global public health. The development of the H7N9 avian influenza vaccine is one of the most effective strategies to prevent influenza pandemics. Virus-like particles (VLPs) influenza vaccines is non-infectious viral structural proteins. Not only to retain the ability to produce neutralizing antibodies against to viral surface protein, but also safer than the conventional inactivated vaccines. In our previous study, we successfully expressed three structural proteins, hemagglutinin (HA), neuraminidase (NA) and matrix (M1) from influenza A / Taiwan / 1/2013 (H7N9) of the VLP in insect cells. In this study, we present a downstream purification method for the VLP platform. The purification process involves microfiltration, chromatography (using ion exchange, affinity and gel filtration combinations), concentration, diafiltration and sterile filtration steps. In this study, 600 ml of the harvest from the baculovirus expression system was used. The characteristics of VLP volume were examined by HA assay, SDS-PAGE and negative staining transmission electron microscopy (TEM). The overall recovery of HA protein was approximately 38%. In the evaluation of immunized mouse, such virus particles have been shown the HI titer >256. This study demonstrated the chromatographic-based purification process can provide an effective VLP vaccine production for the preparation of the H7N9 influenza pandemic.