RECOMBINANT HEMAGGLUTININ PROTEINS FORMULATED IN A NOVEL PELC/CpG ADJUVANT FOR H7N9 SUBUNIT VACCINE DEVELOPMENT

Suh-Chin Wu, Institute of Biotechnology, National Tsing Hua University, Taiwan
scwu@life.nthu.edu.tw
Ting-Hsuan Chen, Institute of Biotechnology, National Tsing Hua University, Taiwan
Ying-Yu Liu, Institute of Biotechnology, National Tsing Hua University, Taiwan
Jia-Tsrong Jan, Genomics Research Center, Academia Sinica, Taiwan
Ming-Hsi Huang, National Institute of Infectious Diseases and Vaccinology, National Health Research Institutes, Taiwan
Maureen Spearman, Department of Medical Science, National Tsing Hua University, Taiwan
Michael Butler, Department of Medical Science, National Tsing Hua University, Taiwan

Key Words: H7N9, recombinant HA, PELC/CpG

Humans infected with H7N9 avian influenza viruses can result in severe pneumonia and acute respiratory syndrome with an approximately 40% mortality rate, and there is an urgent need to develop an effective vaccine to reduce its pandemic potential. In this study, we used a novel PELC/CpG adjuvant for recombinant H7HA (rH7HA) subunit vaccine development. After immunizing BALB/c mice intramuscularly, rH7HA proteins formulated in this adjuvant instead of an alum adjuvant elicited higher IgG, hemagglutination-inhibition, and virus neutralizing antibodies in sera; induced higher numbers of H7HA-specific IFN-γ-secreting T cells and antibody secreting cells in spleen; and provided improved protection against live virus challenges. Our results indicate that rH7HA proteins formulated in PELC/CpG adjuvant can induce potent anti-H7N9 immunity that may provide useful information for H7N9 subunit vaccine development.