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Baculoviral vectored DNA vaccine against Middle East respiratory syndrome coronavirus



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Middle east respiratory syndrome coronavirus (MERS-CoV) is a novel betacoronavirus that has been an emerging infectious disease in human. In 2015, the MERS-CoV outbreak has been occurred in the Republic of Korea. In order to aid prophylactic strategies and control of MERS-CoV outbreak in future, we have developed a MERS-CoV DNA vaccine using baculoviral delivery system. For enhancing cellular delivery, we constructed a non-replicating recombinant baculovirus coated with human endogenous retrovirus envelope (AcHERV). First, we constructed a recombinant baculovirus encoding each of S, S1, RBD genes under the control of the AcHERV system. We confirmed MERS-CoV S, S1 and RBD genes expression levels by western blot in Huh7 cell. To investigate the efficacy of vaccine, we immunized with each of recombinant baculoviruses in Balb/c mice. We found that all three recombinant baculoviruses delivering each of MERS-CoV S, S1 and RBD genes elicited high level of IgG, neutralizing antibody, and IFN- γ . Of these three constructs, S1 showed the highest humoral and cellular immune response. In conclusions, AcHERV baculoviruse could be a potential prophylactic vaccine against MERS-CoV.

Biography

Young Bong Kim has received his Doctorate from Sogang University in Korea and trained at the NIAID/NIH and CWRU in United States. Since his appointment as a Professor at Konkuk University in 2003, he has been working on several vaccines against pathogenic viruses such as HIV, MERS-CoV and ZIKA virus.

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