

The initiation of COVID-19 peptide vaccine R&D project

OncoTherapy Science, Inc. (President & CEO: Jae-Hyun Park; hereinafter, “OncoTherapy”) today announces the initiation of COVID-19 peptide vaccine R&D project and filing of the corresponding patent.

The development of COVID-19 vaccines is mainly targeting the spike protein of virus to produce neutralizing antibodies (humoral immunity); however, some potential issues remain, such as (1) limited targets for recognition of viral surface proteins, (2) difficulty in responding to viral mutation-induced target protein change, and (3) risk of antibody-dependent infection enhancement (ADE). According to the previous reports of SARS coronavirus (SARS-CoV), the cellular immune response, in which virus-specific cytotoxic T cells (CTLs) are highly involved, were induced in the body of individuals infected with SARS coronavirus, suggesting that the presence of virus-specific CTLs is essential for the control of the onset of SARS coronavirus infection. Therefore, it would be highly possible that CTL induction against COVID-19 by peptide vaccines could be effective for controlling infection as well as suppressing the severe progression of the disease, as a part of the induced CTLs may exist as long-lasting memory T cells. Moreover, the low risk of ADE would be expected in the cellular immune response, since the neutralizing antibodies are not involved in the cell-mediated immunity.

For a long time until now, OncoTherapy has been committed to the research and development of cancer peptide vaccines, also has been providing the service for antigen-specific immune response analysis and T cell receptor (TCR) repertoire analysis. By utilizing these OncoTherapy’s research experience and development knowhow, COVID-19 peptide vaccine project was initiated. To find the most appropriate peptide candidates with low possibility to be affected by the future mutation, bioinformatic prediction method was based on the reported viral gene mutations. Considering the risk of autoimmune adverse reactions, peptides with similar amino acid sequences to human protein were excluded. The patent application has been already filed for the candidate peptides that were able to induct CTL induction. OncoTherapy will move forward with the in-depth studies of the candidate peptide vaccine for COVID-19.