

## ABSTRACT

HLA-A\*24:07 is unique to the Indonesian population, dominated by Sundanese and Javanese. As the Caucasian population handles the most worldwide research, a little study on the HLA-A\*24:07 has been undertaken. Recently, the connection of SARS-CoV-2 peptides with HLA, notably HLA-A\*24:02, has been investigated. The only distinction between HLA-A\*24:02 and HLA-A\*24:07 is the residue position 70. No SARS-COV-2 epitope related to HLA-A\*24:07 in IEDB was reported until May 19, 2022. NetMHCPan EL 4.1 and IEDB Immunogenicity web servers were utilized in this study to find 42 immunogenic epitopes strongly interacting with HLA-A\*24:07. Four top epitope candidates were used to examine the presence of glutamine<sup>70</sup> of the HLA-A\*24:02. The glutamine<sup>70</sup> was compared to histidine<sup>70</sup> of the HLA-A\*24:02 for binding properties assessment. The assessment showed a lower affinity of the peptide-HLA-A\*24:07 complex. A slightly different complex structure was influenced by glutamine and histidine's distinct side chains. Molecular docking using HPEPDOCK and CABS-Dock webserver was carried out along with the stability assessment using CABSFLEX. The 3D visualization and the non-covalent interaction were done using the Pymol and Protein-ligand interaction profiler (PLIP). Furthermore, the <sup>2167</sup>NYMPYFFTL<sup>2176</sup> and <sup>1208</sup>QYIKWPWYI<sup>1217</sup> peptides become the most promiscuous epitopes for both HLAs due to their large and aromatic side chain residues that contribute to higher CD8<sup>+</sup> T cell response in the primary infection.

**ACKNOWLEDGEMENT PAGE**

IDENTIFICATION AND COMPARISON OF SARS-COV-2 PEPTIDES BINDING TO HLA-A\*24:02 AND HLA-A\*24:07

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