ABSTRACT

Hasya Nazihatussalma Aghniya. 24020218140032. Characterization of the rbcL Gene Fragment and In Silico Study of Phytochemical Compounds from *Psidium guajava* L**. Leaves as Antiviral Agents Against DENV-3. Under the guidance of Hermin Pancasakti Kusumaningrum and Arina Tri Lunggani.**

Dengue Hemorrhagic Fever (DHF) is caused by the dengue virus, with DENV-3 being one of the dominant serotypes in Indonesia. Guava (*Psidium guajava*) is known to contain various phytochemical compounds with antiviral potential. This study aims to characterize the rbcL gene fragment in guava leaves and explore its phytochemical potential through in silico studies targeting the RNA-dependent RNA polymerase (RdRp) enzyme of the DENV-3 virus. The research methods include DNA isolation, amplification, and sequencing; as well as molecular docking to test the interaction of P. guajava phytochemical compounds with the RdRp enzyme. Results showed that the rbcL gene fragment was successfully identified through PCR and sequencing techniques. In silico studies using molecular docking revealed that the phytochemical compound Aromadendrene has strong potential as an inhibitor of the RdRp enzyme, with a binding affinity value of -7.7 kcal/mol, indicating its potential inhibition of DENV-3 virus replication. This compound also complies with Lipinski's rule, supporting its role as a potential antiviral drug candidate. The conclusion of this study is that phytochemical compounds from guava leaves have potential as antiviral agents against DENV-3, but further studies are needed for in vitro and in vivo validation.

Keywords: *Psidium guajava*, DENV-3, rbcL, molecular docking, RNA-dependent RNA polymerase