ABSTRAK

Jumlah kasus terkonfirmasi COVID-19 di dunia 458.479.635 dengan angka kematian sebanyak 6.047.653 jiwa pada Maret 2022. Beberapa antivirus telah digunakan dalam penanganan sementara COVID-19, yaitu klorokuin, lopinavir-ritonavir, dan remdesivir, tetapi antivirus tersebut bersifat tidak spesifik terhadap SARS-CoV-2, sehingga perlu adanya suatu antivirus baru yang spesifik. Pada penelitian ini telah dilakukan pengujian penghambatan aktivitas 3CLpro oleh ekstrak metanol daun sirsak secara *in vitro* dan mengidentifikasi kandungan alkaloid yang merupakan senyawa *hits* berdasarkan pengujian *in silico* terdahulu. Pengujian *in silico* dilakukan menggunakan *software Discovery Studio* dan *AutodockTools* 4.2 menunjukkan senyawa *hits*, yaitu anonain dengan energi bebas ikatan terendah sebesar -7,9 kkal/mol. Uji KLT dengan fase diam GF_{254}, fase gerak etil asetat:n-heksana dengan perbandingan 2:2 (v/v) dan pereaksi semprot dragendorff menunjukkan keberadaan senyawa alkaloid pada ekstrak metanol daun sirsak dengan Rf 0,2 dan 0,325. Pengujian aktivitas penghambatan ekstrak metanol daun sirsak terhadap enzim 3CLpro dilakukan dengan metode FRET-*based assay*. Hasil pengujian menunjukkan ekstrak metanol daun sirsak dapat menghambat aktivitas enzim sebesar 19,23% pada konsentrasi 1000 µg/mL dan 48,08% pada konsentrasi 2000 µg/mL.

Kata Kunci : COVID-19, Anonain, Ekstrak metanol daun sirsak, *In vitro*

ABSTRACT

The number of confirmed cases of COVID-19 in the world is 458,479,635 with a death toll of 6,047,653 in March 2022. Several antivirals have been used in the temporary treatment of COVID-19, namely chloroquine, lopinavir-ritonavir, and remdesivir, but these antivirals are non-specific. against SARS-CoV-2, so the need for a specific new antiviral. In this study, in vitro testing of the 3CLpro activity inhibition by soursop leaf extract was carried out and identified the alkaloid content which is a hit compound based on previous in silico testing. The in silico test using Discovery Studio and AutodockTools 4.2 software showed the hits compound,namely anonaine with the lowest bond free energy of -7.9 kcal/mol. TLC test with stationary phase GF254, mobile phase ethyl acetate:n-hexane with a ratio of 2:2 (v/v)and Dragendorff spray reagent showed the presence of alkaloid compounds in the methanol extract of soursop leaves with Rf 0.2 and 0.325. Testing the inhibitory activity of soursop leaf methanol extract against the 3CLpro enzyme was carried outusing the FRET-based assay method. The test results showed that soursop leaf methanol extract could inhibit enzyme activity by 19.23% at a concentration of 1000g/mL and 48.08% at a concentration of 2000 g/mL.

Keywords : COVID-19, anonaine, Soursop leaf methanol extract, *In vitro*