

## Aktivitas Antiviral Aspergillus Terreus (Sulochrin) terhadap virus Dengue = Antiviral activity of aspergillus terreus against Dengue Virus / Anastasia Michelle Pratanata

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### Abstrak

<b>ABSTRAK</b><br>

Sampai sekarang, belum ada rekomendasi vaksin maupun anti-viral untuk virus Dengue. Menimbang besarnya masalah demam berdarah di sektor kesehatan masyarakat di Indonesia, penemuan obat demam berdarah sangatlah diperlukan. Sulochrin, senyawa yang diisolasi dari *Aspergillus terreus* diketahui dapat menghambat pertumbuhan HCV, sesama virus flaviviridae seperti virus dengue. Riset ini bertujuan untuk menginvestigasi adanya aktivitas antiviral dari senyawa sulochrin sebagai obat demam berdarah yang potensial. Antiviral assay dilakukan terhadap sel huh7 yang telah diinfeksi virus dengue. Sulochrin dengan 6 konsentrasi berbeda diuji cobakan untuk mengetahui nilai maksimum penghambatan 50% sel (IC50) dengan metode Focus Assay. Efek toksisitas (CC50) diukur dengan menggunakan metode MTT Assay. Indeks selektivitas ditentukan melalui ratio CC50/IC50. Aktivitas inhibisi signifikan senilai 91,78% (p=0.005) ditemukan pada konsentrasi sulochrin 80#g/ml. Ketika konsentrasi sulochrin diturunkan menjadi 40#g/ml dan 20#g/ml, aktivitas inhibisi turun menjadi 39.73% (p=0.02) dan 17.69 (p=0.09). Pada konsentrasi sulochrin 10#g/ml, aktivitas inhibisi tidak teramati (p=0.98). Peningkatan pertumbuhan virus dengue ditemukan pada konsentrasi sulochrin dibawah 10#g/ml, tepatnya pada konsentrasi 5#g/ml dan 2.5#g/ml dengan nilai inhibisi -11.32% (p=0.21) dan -2.35% (p=0.38). Hasil penelitian mendapatkan nilai IC50 sebesar 56.86#g/ml, CC50 sebesar 150.85#g/ml dan SI sebesar 2.65. Sebagai kesimpulan, *Aspergillus terreus* (sulochrin) menunjukkan kedua sifat inhibisi dan peningkatan pertumbuhan. Meskipun demikian, rendahnya nilai toksisitas ekstrak menunjukkan karakteristik yang baik untuk sebuah antiviral. Eksplorasi lebih lanjut dengan derivat sulochrin perlu dilakukan untuk mengetahui aktifitas inhibisi terhadap virus dengue dari senyawa murni.

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<b>ABSTRACT</b><br>

To date, there is no approved vaccine and anti-viral regime for Dengue fever. Considering how dengue fever poses a significant burden to Indonesian public health sector, discovery on therapeutic agent against DENV is imperative. Sulochrin, a compound isolated from *Aspergillus terreus* is known to potently inhibit HCV, a flaviviridae virus similar to DENV. This research aims to investigate the anti-viral activity of sulochrin from *Aspergillus terreus* as a

possible cure for DENV infection. Anti-viral assay of Sulochrin is evaluated in Huh7 infected cells. 6 different concentrations of Sulochrin (80 µg/ml, 40 µg/ml, 20 µg/ml, 10 µg/ml, 5 µg/ml, and 2.5 µg/ml) were given to measure its half maximal inhibitory concentration (IC<sub>50</sub>) using Focus Assay. Toxicity effect was measured using MTT Assay (CC<sub>50</sub>). Selectivity Index was determined through ratio of CC<sub>50</sub>/IC<sub>50</sub>. Significant inhibition of 91.78% was observed upon treatment with sulochrin 80 µg/ml (p=0.005). As concentration was decreased to 40 µg/ml and 20 µg/ml, inhibition activity decreased accordingly to 39.73% (p=0.02) and 17.69% (p=0.09) respectively. At treatment concentration of 10 µg/ml, zero inhibition was observed similar to control DMSO (p=0.98). An improved in replication was seen with treatment below 10 µg/ml, with -11.32% (p=0.21) and -2.35% (p=0.38) at concentration of 5 µg/ml and 2.5 µg/ml respectively. The results also showed half maximal inhibitory concentration of 56.86 µg/ml (IC<sub>50</sub>), half toxicity concentration of 150.85 µg/ml (CC<sub>50</sub>) and Selectivity Index of 2.65. To conclude, *Aspergillus terreus* (sulochrin) exert both anti-viral and enhancement activity to DENV. Nonetheless, its low cytotoxic value reflects a favorable feature for potential anti-viral. A further exploration on its derivative should be done to find the pure compound inhibition activity to DENV.