AKTIVITAS ANTIVIRUS EKSTRAK AIR *Streptomyces* sp. GMR22 TERHADAP VIRUS DENGUE SEROTIPE 1

INTISARI

Streptomyces sp. diketahui memiliki kemampuan memproduksi metabolit sekunder dalam jumlah besar, yang dapat digunakan sebagai vitamin, enzim, agen anti kanker, antibiotik, serta sebagai senyawa antivirus. Sampel penelitian ini adalah isolat *Streptomyces* sp. GMR22 yang berasal dari rizhosfer tegakan tanaman kayu putih di hutan Wanagama Yogyakarta. Tujuan penelitian ini adalah mengetahui sitotoksisitas ekstrak air *Streptomyces* sp. GMR22 terhadap sel BHK-21 dan potensi sebagai antivirus terhadap virus dengue. Penelitian ini meliputi pemeliharaan isolat, fermentasi, ekstraksi, uji sitotoksisitas (*WST-1 assay*) untuk menentukan CC_{50}, propagasi virus dengue, *plaque assay* untuk mengetahui titer virus,dan uji antivirus. Uji antivirus dengan memberikan perlakuan berupa pemberian ekstrak air *Streptomyces* sp. GMR22 dengan berbagai konsentrasi di bawah nilai CC_{50} pada kultur sel BHK-21 yang telah diinfeksi dengan virus dengue. Aktivitas antivirus diamati dengan metode *Reverse Transcriptase-Polimerase Chain Reaction* (RT-PCR). Kemampuan penghambatan virus dengue dianalisis secara semi kuantitatif berdasarkan pita yang terbentuk dari hasil RT-PCR dengan menggunakan program *Image-J*. Hasil penelitian menunjukkan viabilitas sel BHK-21 akibat perlakuan ekstrak air GMR22 menghasilkan nilai CC_{50} 460 µg/ml. Hasil. Hasil penelitian menunjukkan bahwa ekstrak air *Streptomyces* sp. GMR22 bersifat tidak toksik terhadap sel BHK-21 dan pada dosis 300 µg/ml mampu menekan laju pertumbuhan virus hingga ± 90%.

Kata kunci : DENV-1, ekstrak air , *Streptomyces* sp. GMR22, antivirus

ANTIVIRUS ACTIVITY OF WATER EXTRACT FROM *Streptomyces* sp. GMR 22 AGAINST DENGUE VIRUS SEROTYPE 1

Abstracts

*Streptomyces sp.*is known to have the capability of producing secondary metabolite in large quantities, which can be used as vitamin, enzym, anti-cancer agent, antibiotics, and antivirus compound. *Streptomyces sp.* GMR22 obtained from stands of eucalyptus plants in Wanagama forest Yogyakarta. The purpose of this research is to determine the potency of *Streptomyces sp.* GMR22 water extract fraction secondary metabolite as antivirus for dengue virus. This research was included maintain isolates, fermentation, extraction, cytotoxicity assay (WST-1 assay) to determine CC_{50}, dengue virus propagation, plaque assay to determine virus titer, and antivirus test. The test of antivirus was conducted by giving water extract *Streptomyces* sp. GMR22 with various concentrations below the value of CC_{50} in BHK-21 cells that have been infected by dengue virus. Antivirus activity was observed by Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) method.The ability of dengue virus inhibition results were analyzed by band quantification of RT-PCR using Image-J program. The results showed the viability of BHK-21 cells as a result of the water extract treatment GMR22 produce CC_{50} value of 460 µg/ ml. The results showed that a dose of 300 ug / ml of Streptomyces sp. GMR22 is able to suppress viral growth rate of up to ± 90%.

Keywords : dengue fever, water extract, *Streptomyces* sp., antivirus