Perbandingan penghambatan reseptor dan proses penempelan virus dengue pada sel vero dari senyawa murni piperin = Comparison of receptor inhibition and the attachment process of dengue virus on vero cells from pure piperine compounds

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Abstrak

Demam berdarah dengue (DBD) merupakan penyakit yang disebabkan oleh infeksi virus dengue (DENV) yang ditularkan ke manusia melalui nyamuk Aedes betina dan masih menjadi perhatian di Indonesia. DENV menginfeksi dimulai dengan penempelan protein virus ke reseptor sel target. Pengobatan spesifik untuk DBD masih dalam proses pengembangan. Piperin, yang merupakan senyawa alkaloid, dapat dijadikan kandidat antivirus yang baik terhadap DENV karena piperin telah diteliti memiliki CC50 227,096g/ml, IC50 10,708g/ml, dan SI 21,208. Oleh karena itu, peneliti melakukan uji senyawa murni piperin 2xIC50 yaitu 21,416g/ml terhadap DENV pada dua perlakuan penghambatan yaitu reseptor sel dan penempelan virus. Penghambatan reseptor sel dilakukan dengan memberikan piperin ke sel Vero kemudian diinfeksikan oleh virus. Penghambatan penempelan virus dilakukan dengan memberikan piperin kepada virus kemudian diinfeksikan ke sel Vero. Persentase efektivitas hambatan dihitung dengan membandingkan titer virus perlakuan dengan perlakuan DMSO dari hasil focus assay. Persentase viabilitas sel dihitung dengan membandingkan absorbansi perlakuan dengan DMSO dari hasil MTT assay. Persentase efektivitas hambatan dan viabilitas sel pada penghambatan reseptor sel sebesar -13,555% dan 105,850%. Persentase efektivitas hambatan dan viabilitas sel pada penghambatan penempelan virus sebesar 29,044% dan 105,850%. Hal ini menunjukkan senyawa murni piperin lebih efektif menghambat DENV pada penghambatan penempelan virus dibandingkan dengan penghambatan reseptor sel

.....Dengue hemorrhagic fever (DHF) is a disease caused by infection with the dengue virus (DENV) which is transmitted to humans through female Aedes mosquitoes and is still a concern in Indonesia. DENV infection begins with the attachment of viral proteins to target cell receptors. Specific treatment for DHF is still under development. Piperine, which is an alkaloid compound, can be a good antiviral candidate against DENV because piperine has been studied to have a CC50 of 227,096g/ml, an IC50 of 10.708g/ml, and an SI of 21.208. Therefore, the researchers tested the pure compound piperine 2xIC50, which is 21.416g/ml against DENV in two inhibitory treatments, namely cell receptors and virus attachment. Cell receptor inhibition was carried out by giving piperine to Vero cells and then infected by the virus. Inhibition of virus attachment was done by giving piperine to the virus and then infecting Vero cells. The percentage of inhibition effectiveness was calculated by comparing the viral titer of the treatment with the DMSO treatment from the results of the focus assay. The percentage of cell viability was calculated by comparing the absorbance of the treatment with DMSO from the MTT assay results. The percentage of the effectiveness of inhibition and cell viability on cell receptor inhibition was -13.555% and 105.850%, respectively. The percentage of effective inhibition and cell viability in inhibiting virus attachment was 29.044% and 105.850%, respectively. This shows that the pure compound piperine is more effective at inhibiting DENV in inhibiting viral attachment compared to inhibition of -cell receptors