

## Efek antiviral dari Ribavirin terhadap Replikasi virus Dengue in vitro = The antiviral effect of ribavirin to the replication of dengue virus in vitro / Rebecca Amanda

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### Abstrak

[Demam berdarah dengue (DBD) adalah penyakit paling umum di negara-negara tropis dan sub-tropis dan ditransmisikan melalui gigitan nyamuk. Namun hingga saat ini, belum ada pengobatan yang spesifik ataupun vaksin untuk DBD.

Penelitian ini bertujuan untuk mengevaluasi pengaruh Ribavirin pada replikasi virus dengue (DENV). Penelitian ini merupakan penelitian eksperimental in Vitro yang dilaksanakan di Laboratorium Departemen Mikrobiologi. Kami menggunakan sel Vero dan DENV serotype 1 koleksi Departemen Mikrobiologi. DENV, yang kemudian dipaparkan dengan berbagai konsentrasi Ribavirin dengan 6 kali pengulangan. Sebagai pembanding, kami menggunakan DENV yang dipaparkan dengan pelarut yaitu dimetil sulfoksida (DMSO), sedangkan DENV yang tidak dipaparkan dengan ribavirin atau pelarut digunakan sebagai control negative. Uji fokus digunakan untuk menentukan persentasi inhibisi dari replikasi DENV. Untuk menentukan efek sitotoksik dari ribavirin, kami menggunakan MTS assay (3-(4,5-dimethylthiazol-2-yl)-5-(3-arboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium). Ribavirin dengan konsentrasi 5 &#956;g/mL, menghambat replikasi virus sebesar 75% jika dibandingkan dengan DMSO. Pada konsentrasi 1 &#956;g/mL, 0.5 &#956;g/mL, dan 0.1 &#956;g/mL, ribavirin menghambat replikasi virus masing-masing sebesar 64%, 46%, dan 50% dan secara statistik menunjukkan perbedaan bermakna. Dari data yang didapat dalam penelitian ini, half inhibitory concentration (IC50) adalah 0.25 &#956;g/mL. Hasil uji MTS menunjukkan bahwa half cytotoxic concentration (CC50) adalah 106.83 &#956;g/mL sehingga ribavirin termasuk dalam katagori tidak toksik. Dari penelitian ini dapat disimpulkan bahwa, ribavirin memiliki inhibisi yang kuat terhadap replikasi terhadap replikasi DENV dan memiliki sitotoksitas rendah terhadap sel-sel; Dengue hemorrhagic fever (DHF) is the most common disease in tropical and sub-tropical countries and is transmitted by mosquito bite. Hitherto, there is still no specific treatment or vaccine for DHF. This study aimed to evaluate the effect of ribavirin to the replication of dengue virus (DENV). This study was an in vitro experimental study that was conducted in Microbiology Department Laboratory.

We used vero cells and DENV serotype 1 from the collection of Microbiology Department. DENV was exposed with different concentrations of ribavirin with 6 times of repetition. As a comparison, we used DENV that was exposed to diluent which is dimethyl sulfoxide (DMSO), while DENV that was no exposed to any ribavirin or diluent was used as control negative. Focus assay was used to determine percentage of inhibition of the DENV replication. To determine cytotoxicity effect of ribavirin, we used MTS assay (3-(4,5 dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4sulfophenyl)-2H-tetrazolium). Ribavirin with the concentration of 5 &#956;g/mL inhibited virus replication by 75% compared to DMSO. On concetration 1 &#956;g/mL, 0.5 &#956;g/mL, dan 0.1 &#956;g/mL, ribavirin inhibited virus replication by 64%, 46%, dan 50%, respectively and stastically showed significant difference. From the data obtained in this study, the half inhibitory concentration (IC50) was 0.25 &#956;g/mL. The result from MTS assay showed that

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