

## Uji aktivitas antibakteri antimycin A3 dan senyawa analognya terhadap escherichia coli = Antibacterial activity test of antimycin A3 and its compound analogs against escherichia coli

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### Abstrak

Diare yang masih sering terjadi di masyarakat umumnya disebabkan oleh bakteri gram negatif *Escherichia coli*. Bakteri yang sering ditemukan di lingkungan ini telah diteliti mulai menunjukkan resistensi terhadap beberapa jenis antibiotik. Dalam penelitian ini, senyawa novel analog 3-13 dan aromatik sederhana 1-4 yang merupakan turunan dari senyawa Antimycin A3 telah diujikan terhadap *Escherichia coli* galur ATCC 25922.

Penelitian ini didasari oleh penelitian sebelumnya oleh Arsiati et al yang menunjukkan bahwa modifikasi pada gugus dilakton cincin sembilan mampu meningkatkan aktivitas biologisnya terhadap kanker. Senyawa-senyawa tersebut diuji dalam konsentrasi 400 g/mL, 200 g/mL, 100 g/mL, dan 50 g/mL terhadap suspensi *Escherichia coli* dengan konsentrasi  $1,5 \times 10^7$  bakteri/mL. Penelitian ini dijaga dengan dilakukan dua kali pengulangan. Setelah diujikan, hasil reaksi tersebut diinkubasi selama 24 jam.

Hasil penelitian ini menunjukkan adanya peningkatan aktivitas antibakteri terhadap senyawa novel aromatik 3 (senyawa 16) daripada Antimycin A3 terhadap bakteri *Escherichia coli*. Selain itu, ditemukan juga bahwa senyawa Antimycin A3 tidak menunjukkan aktivitas antibakteri terhadap *Escherichia coli*, berbeda dengan hasil penelitian oleh Arsianti et al yang menunjukkan adanya aktivitas antibakteri dalam metode difusi agar. Dari hasil penelitian tersebut, dapat disimpulkan bahwa modifikasi pada gugus dilakton cincin sembilan Antimycin A3 dapat meningkatkan aktivitas antibakterinya terhadap *Escherichia coli*.

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Diarrhea which is still a common thing to find in society generally caused by gram-negative bacteria *Escherichia coli*. This bacteria which often be found in the environments have been studied starting to show resistance to several types of antibiotics. In this study, novel analogue compounds 3-13 and aromatic 1-4 which are derivates from compounds Antimycin A3 has been tested against ATCC 25922 strain *Escherichia coli*.

This study is based on previous research by Arsiati et al who had demonstrated that modification on the cluster 9-ring-dilactone can increase its biological activity against cancer. The compounds are tested in a concentration of 400 g/mL, 200 g/mL, 100 g/mL, and 50 g/mL against *Escherichia coli* with concentration  $1,5 \times 10^7$  bacteria/mL. This research was also being done in two repetitions. Once tested, the reaction products were incubated for 24 hours.

The results showed an increase in antibacterial activity of novel aromatic compound 3 (compound 16) than Antimycin A3 against the bacteria *Escherichia coli*. In addition, it was found that the compounds Antimycin A3 showed no antibacterial activity against *Escherichia coli*, in contrast to the results of research by Arsianti et al who had showed antibacterial activity in the agar diffusion method.

From these results, it can be concluded that modifications of 9-ring-dilactone of Antimycin A3 can enhance its antibacterial activity against *Escherichia coli*