



## **AKTIVITAS ANTIRETROVIRUS EKSTRAK ETANOLIK *Ancorina* sp. TERHADAP VIRUS HIV-1**

Oleh:

**Rudi Nirwantono**

NIM : 10/302022/BI/8530

### **Intisari**

Saat ini banyak ditemukan kasus resistensi virus HIV terhadap antiretrovirus yang ada. Oleh karena itu sangat diperlukan penemuan dan pengembangan antiretroviral baru. Tujuan penelitian ini adalah untuk mempelajari potensi spons *Ancorina* sp. dari zona intertidal Gunungkidul dalam menghambat proliferasi virus HIV-1. Dalam penelitian ini digunakan ekstrak etanolik spons *Ancorina* sp. dan sel HT-29 yang ditransfeksi dengan plasmid DNA *whole genom* HIV pNL4-3. Uji immunostaining digunakan untuk konfirmasi keberhasilan transfeksi. Untuk pegujian sitotoksitas digunakan *Microculture Tetrazolium Assay* dengan konsentrasi bertingkat (7,8125; 15,125; 31,25; 62,5; 125; 250; 500 µg/mL). Pengujian penghambatan proliferasi virus HIV selanjutnya dilakukan dengan metode *cell free virus* menggunakan konsentrasi ekstrak yang berbeda (7,8125; 15,125; 31,25 µg/mL). Titer virus selanjutnya diukur dengan qRT-PCR. Hasil penelitian menunjukkan bahwa ekstrak etanolik *Ancorina* sp. memiliki nilai IC<sub>50</sub> terhadap sel HT-29 sebesar 82,11 µg/mL. Berdasarkan hasil uji penghambatan proliferasi virus, pada hari ke-3 ekstrak etanolik *Ancorina* sp. dapat menurunkan konsentrasi virus sebesar 39,84 % dengan konsentrasi ekstrak 31,25 µg/mL dan sebesar 4,94 % pada hari ke-10 dengan konsentrasi ekstrak 7,81 µg/mL. Berdasarkan hasil penelitian, ekstrak etanolik spons *Ancorina* sp. dapat menghambat proliferasi virus HIV dan memiliki potensi besar sebagai kandidat senyawa anti-HIV.

**Kata Kunci:** *Ancorina* sp., antiretrovirus, HIV-1, HT-29, pNL4-3 plasmid



## **ANTIRETROVIRUS ACTIVITY OF ETHANOLIC EXTRACT OF *Ancorina* sp. ON VIRUS HIV-1**

by:

**Rudi Nirwantono**

NIM : 10/302022/BI/8530

### **Abstract**

Nowadays there are a lot of cases of HIV virus resistance againsts antiretroviral drugs. Therefore, the research on antiretroviral drugs to inhibit the proliferation of HIV need to be performed. The purpose of this research was to determine the proliferation HIV-1 inhibition activity of *Ancorina* sp. sponge from Gunungkidul intertidal zone. In this research, it had been performed the extraction of *Ancorina* sp. by ethanol. Cytotoxicity assay towards HT-29 cells was conducted at multilevel concentration (500; 250; 125; 62.5; 31.25; 15.625; 7.81  $\mu\text{g}/\text{mL}$ ). HT-29 cell electroporation using plasmid pNL4-3 and was verified with immunostaining. Antiretroviral activity test of *Ancorina* sp. on HT29 infected cells was conducted by cell free virus method and determination of titer virus inhibition by qRT-PCR. Cytotoxicity test results of *Ancorina* sp. ethanolic extract on HT29 cells were 258.8  $\mu\text{g}/\text{mL}$ . Based on the antiretroviral test on the 3<sup>rd</sup> day, the most effective concentration to inhibit the virus proliferation was 31.25 $\mu\text{g}/\text{mL}$  at 39,84 %. Meanwhile, the results of inhibition test on the 10<sup>th</sup> day, the most effective concentration was 7.81  $\mu\text{g}/\text{mL}$  at 4,94 %. It was proved that the ethanol extract of *Ancorina* sp. potential to be developed as HIV-1 antiviral through the activity of proliferation inhibition.

**Keyword:** *Ancorina* sp., antiretrovirus, HIV-1, HT-29, plasmid pNL4-3