

Abstract

Chemotherapy is the most widely used cancer treatment, however, due to the lack of specificity to tumor cells, progression of drug resistance, and undesirable side effects produced by some chemotherapeutic, the discovery for novel anti-cancer drugs with fewer side effects with greater therapeutic efficiency is still a priority of cancer research. The major source of anti-cancer compounds is natural products composed of microorganism's products or their derivatives. Indonesia is a country rich in biodiversity with many species organisms yet to be discovered, thus Indonesia has promising sources of new molecules with potential anticancer activity. This project aims to analyze bacteria samples that may lead to new chemical scaffolds among their secondary metabolites with cytotoxic activity. A literature study was conducted to identify among all the isolates species in i3L-USAID database as potential candidates of novel anti-cancer drugs. From this preliminary study, *Aneurinibacillus sp.* and *Ochrobactrum sp.* were chosen for *in vitro* evaluation to assess their cytotoxicity using MTT assay toward tumorigenic (HeLa) and non-tumorigenic (3T3 Fibroblast) cell. *Aneurinibacillus sp.* extract tends to suppress the HeLa cell proliferation, however, in contrary enhance the growth of 3T3 fibroblast non-tumorigenic cell lines as the increasing concentration. Meanwhile, *Ochrobactrum sp.* extract was able to significantly suppress the HeLa cell without any cytotoxic effect toward 3T3 fibroblast cell lines. It is suspected that different composition of extract between those two bacteria affects cell growth and proliferation. In conclusion, *Ochrobactrum sp.* has better potential as the source of anticancer agents due to its safety and efficacy. Further researches need to be done to confirm these findings.