

Abstract

Cancer is the leading cause of death globally. In today's world, chemotherapeutic agent remains the standard treatment for cancer, since it allows systemic distribution of cytotoxic compounds. Bacteria are one of the major contributors for anticancer compounds. Bacteria possess their ability to kill cancer cell through the production of secondary metabolites. Indonesia is a country with huge biodiversity, opening the potential to find diverse type of secondary metabolite from bacteria which might be a potent cytotoxic compound. In this study, bacteria associated with decomposing plant matters were selected, investigated, and evaluated for their potential to produce secondary metabolite with possible cytotoxic molecules. Hundreds of bacteria IDs were included in current experiment. These bacteria were previously isolated by i3L-USAID research team who studied Indonesian microbial diversity. Rearrangements of database and literature study were part of the bacteria selection method in the current study. The selected genus, *Curtobacterium* and *Dyella*, were cultured and produced a total of three extracts that were tested for cytotoxic activity against HeLa and NIH-3T3. Cytotoxicity assessment was performed through morphological observation and MTT assay. The result demonstrated that dead cells were observable under microscope on both cell line treated with the extracts, especially *Curtobacterium sp.* and *Dyella sp.*(1) extracts at the higher concentration of 1000 µg/mL. Meanwhile, MTT assay on both cell lines showed an increase of cell viability percentage higher than the control group, indicating non-cytotoxic activity in all of the extracts. Further studies are required to evaluate the activity of extracts towards the cell lines as well as to confirm the findings during morphological observation.

Keywords: bacteria extract, cytotoxicity, Indonesia biodiversity, Curtobacterium, Dyella