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**by Characteristics and resistance of rhizobacteria of potential hyperaccumulator vegetation to gold
mine tailing stress**

ABSTRACT

The use of local bacteria is preferred in bioleaching as an environmental-friendly alternative technology in gold mining. In a preliminary study, rhizobacteria were isolated and cultured from three potential hyperaccumulator vegetations from the Ratatotok gold mine, Indonesia, namely *Pteris vittata* L., *Syzygium aromaticum* L., and *Swietenia mahagoni* Jacq. These rhizobacteria still need to be characterized and identified. This study, therefore, is aimed to cover bacterial phenotypic characterization, bacterial resistance test to tailings, and identification of bacterial most resistant to tailings. The bacterial resistance test to tailings was carried out at various tailing concentrations, and the three most resistant bacteria were selected for molecular identification through genotypic characterization to determine the species' name by analyzing the 16S rRNA gene. The results reveal that the phenotypic characteristics of the bacterial isolates are varied, but all of them are the IAA hormone producers. The highest IAA producer is the isolate from the rhizosphere of *S. aromaticum*. Based on the genotypic characterization test, three most resistant isolates to tailing stress are *Pseudomonas aeruginosa* Schröter strain RTKP1 and *Stenotrophomonas geniculata* Wright strain RTKP2, both from the rhizosphere of *P. vittata*; and *Bacillus cereus* strain RTKS from the rhizosphere of *S. aromaticum*. These three strains need to be further tested for their bioleaching ability to recover gold from tailings. In addition, this study recommends that gold recovery study using biological agents can combine the role of hyperaccumulator plants in phytomining and the role of rhizobacteria in bioleaching.

Kata Kunci: *hyperaccumulator-vegetation, rhizobacteria, resistance, tailing*