

## ABSTRACT

Degenerative diseases such as Alzheimer's and Parkinson's are closely related to the process of protein aggregation, which is a conformational change in protein structure resulting in the formation of protein aggregates. This aggregation can be inhibited by antiaggregation compounds, one of which comes from secondary metabolites produced by endophytic bacteria. This study aims to identify endophytic bacterial isolates from geothermal ferns (*Pteridium aquilinum*) with the highest antiaggregation activity and characterise their secondary metabolites. A total of 16 secondary metabolites were tested for antiaggregation ability using turbidimetric spectrophotometry and Congo red dye decolorisation methods. Fractions of secondary metabolites from the best isolates were then analysed to identify the presence of bioactive compounds. Phenotypic characterisation and 16S rRNA gene sequence analysis were performed to identify the isolates. Isolate D11 showed very strong protein antiaggregation activity with effective concentrations in the range of 1-5 ppm. Fractionation of secondary metabolites of D11 showed the presence of alkaloids in distilled water and n-hexane fractions, while tannins were detected in the ethyl acetate fraction. Phenotypic characterisation showed D11 to be a bacillus-shaped Gram-negative bacterium. 16S rRNA gene analysis confirmed that this isolate is closely related to *Stutzerimonas stutzeri*. The results of this study confirmed that isolate D11 has the ability as a protein antiaggregation agent.

**Keywords :** Protein aggregation, Antiaggregation, Endophytic Bacteria, Secondary Metabolites

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