ABSTRACT:

A phylogenetic analysis of an unknown strain AZZ2 isolated from volcanic area Gunung Sibayak Indonesia was performed. Their phylogenetic relationships were analysed using MEGA4 software® to ascertain its evolutionary distance by reconstructing a phylogenetic tree of these organisms. The evolutionary history and bootstrap consensus tree were inferred using the Neighbor-Joining method from 500 replicates. The tree is drawn to scale, with branch lengths (next to the branches) in the same units as those of the evolutionary distances used to infer the phylogenetic tree. The evolutionary distances were computed using the p-distance method and were in the units of the number of base substitutions per site. Based on the partial 16S rDNA sequence determination, the strain showed high sequence similarity to Citrobacter sp. strain JC73/SL7. AZZ2 gene was also compared among known dehalogenase producing bacteria 16S rDNA genes. The results suggested that AZZ2 was closely related to the Serratia marcescens HL1. On the basis of phylogenetic identification only, AZZ2 was subjected to grow on 2,2-dichloropropionate (2,2DCP). The results suggested that strain AZZ2 can degrade 2,2DCP as expected similar to the characteristic of strain HL1 that can grow on halogenated compound. From this study, there was a possibility to predict the phenotype of newly isolated bacteria. The present findings also show that the evolutionary relationships of 16S rDNA gene strain AZZ2 were illustrated by phylograms and both topology are not in good agreement and may suggest an uncertainty of the origin of dehalogenases in volcanic area.