

The Growth and Morphological Characterization of Tropical Thermophilic Bacterium *Parageobacillus caldoxylosilyticus* ER4B

ABSTRACT

Parageobacillus caldoxylosilyticus is a rod-shaped thermophilic bacterium that can grow optimally at high temperatures. The thermophilicity of the bacterium is expected to be largely accounted for by the production of thermostable enzymes which has valuable applications in many fields. However, the species is poorly studied, hence, the growth conditions at high temperatures remained unclear until today. Therefore, this study aimed to determine the growth characterization of *P. caldoxylosilyticus*, including growth media preferences, optimal growth temperature, as well as minimum and maximum growth temperature. *P. caldoxylosilyticus* strain ER4B isolated from oil palm empty fruit bunch compost was used in this study. The bacterial strain was first identified using 16S rRNA sequencing, and the subsequent BLAST result showed that it is closest to *P. caldoxylosilyticus* strain UTM6. It is found that ER4B grew best in LB as compared to R2A, TSB, and NB medium. Further temperature tests determined the optimum growth temperature of the strain to be at 64°C. Besides, the bacterium forms mucoid circular punctiform colonies that are yellowish in color on an agar plate, and the colony is usually 2 mm to 4 mm in diameter. The microscopic analysis also revealed that strain ER4B is a Gram-positive rod-shaped bacterium that has a length ranging from 3 μm to 6 μm , with a diameter of around 0.5 μm .