

Growth and Morphological Characterisation of Tropical Thermophilic Bacterium *Parageobacillus caldoxylosilyticus* ER4B

ABSTRACT

Parageobacillus caldoxylosilyticus is a rod-shaped thermophilic bacterium that can grow optimally at high temperatures. The thermophilic features of the bacterium are expected to be largely accounted by the production of thermostable enzymes which has valuable applications in many fields. However, growth study on this species is very limited and the growth conditions at high temperatures remained unclear. Therefore, this study aimed to determine the morphological and growth characterisation of *Parageobacillus caldoxylosilyticus*, including growth media preferences, optimal growth temperature, and construction of growth curve. *P. caldoxylosilyticus* strain ER4B that was isolated from oil palm empty fruit bunch compost was characterised in this study. The bacterial strain was firstly identified based on 16S rRNA gene sequence, and the subsequent sequence similarity search showed that it is closest to *P. caldoxylosilyticus* strain UTM6. It is found that ER4B grew best in Lennox Broth as compared to Reasoner's 2A Broth, Trypticase Soy Broth, and Nutrient Broth media. Further tests were conducted and the optimum growth temperature of the strain was determined to be at 64 °C. The bacterium forms mucoid circular punctiform colonies that are yellowish and with diameter of 2 mm to 4 mm. It 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.