

## **Screening, isolation, and characterization of amylase-producing bacteria from Poring Hot Spring Sabah, Malaysia**

### **ABSTRACT**

Fazal BZ, Budiman C, Amin Z, Ling CMW. 2022. Screening, isolation, and characterization of amylase-producing bacteria from Poring Hot Spring Sabah, Malaysia. *Biodiversitas* 23: 2807-2815. Thermostable  $\alpha$ -amylases are being used in a wide range of industries, including food, textiles, detergents, pharmaceuticals, and fine chemicals. A good source of thermostable  $\alpha$ -amylases in thermophilic bacteria is found in high-temperature habitats like hot springs. Hence, this study aimed to screen, isolate, and characterize amylase-producing bacteria (APB) from the Poring hot spring in Sabah. Sediment and water samples were collected from the hot springs, serially diluted, plated onto the Luria Bertani agar medium containing starch, and incubated at 60°C for 48 hours. The amylase-producing bacterium was identified by the halo formation around the colony after the agar medium was stained with Lugol's solution. Nine colonies were found to be able to form halo zones, with a creamy colony (A7 strain) producing the highest amylolytic index (4.24). Further characterization of the A7 strain showed that the isolate was a Gram-positive, rod-shaped bacterium, with a positive reaction upon oxidase and catalase tests. The 16S rRNA sequence showed that the A7 strain had 99.81% similarity with the *Anoxybacillus flavithermus*, and therefore identified as *A. flavithermus* A7 strain. Further, the growth curve analysis indicated that the A7 strain grew well at 60°C. The 3, 5-dinitrosalicylic acid (DNS) assay showed the crude enzyme secreted by the A7 strain exhibited optimum amylase activity at 60°C with  $8.6 \times 10^{-2}$  U/ml. This is the first APB obtained from hot springs in Sabah and promising for further studies and applications.