ABSTRACT

Cellulose can be hydrolyzed using the biocatalyst enzyme cellulase into its monomer, glucose. One of the producers of cellulase enzymes is microorganisms such as endophytic bacteria. Previous research has succeeded in obtaining 3 isolates of endophytic bacteria from the bark of the Waru plant, namely Acinetobacter junii Z3, Delftia lacustris Z8, and Acinetobacter ursingii Z10 and 2 isolates from the leaves of the Waru plant, namely Pseudomonas hibiscicola WK and Staphylococcus warneri WR. This study continues previous research aimed at producing, purifying, characterizing, and enzymatic kinetics of cellulase from endophytic bacteria Staphylococcus Warneri WR of waru plants (Hibiscus Tiliaceus). The stages of this study include rejuvenation of endophytic bacteria WR on Carboxymethyl Cellulose (CMC) media, bacterial production curves, cellulase enzyme production, fractionation with ammonium sulfate and dialysis, characterization of the effects of temperature and pH, and the manufacture of Km and Vmax of endophytic bacterial cellulase enzymes WR. This study confirms that these bacteria are Staphylococcus Warneri WR with gram-positive staining results, round colonies, and coccus cell shapes. WR bacteria can adapt and live optimally on CMC media. The life span of bacteria on CMC media is longer, with a lag phase of 24 hours, a log phase of 54 hours, and a stationary phase of 54 hours. The fraction with the highest specific activity value was obtained in the first fraction. Characterization of cellulase enzyme activity obtained optimum data of endophytic bacteria Staphylococcus warningeri WR at a temperature of 30°C, pH 6.7, and an incubation time of 15 minutes. Calculation of KM and Vmax of cellulase enzyme of endophytic bacteria Staphylococcus warningeri WR obtained Km of 0,0048 M and Vmax of 16,6667 M/min.

Keywords: *Endophytic Bacteria. Waru Plants, Cellulase Enzyme, Enzyme Kinetics*