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Screening, Purification and Characterization of a Prokaryotic Isoprimeverose-producing Oligoxyloglucan Hydrolase from *Oerskovia* sp. Y1

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Isoprimeverose-producing oligoxyloglucan hydrolase (IPase; EC 3.2.1.120) is a unique β-glycosidase that cleaves xyloglucan oligosaccharides at the non-reducing end, producing isoprimeverose. Here, we describe the first reported identification and characterization of a prokaryotic IPase. We purified an IPase with a molecular mass of 105 kDa from the culture supernatant of an Actinomycetes species, *Oerskovia* sp. Y1, and characterized its pH and thermal stability. The enzyme was stable between pH 3.5 and 7.5, and its optimum pH was 4.5. We also found that it was stable at temperatures up to 45°C, and the optimal temperature for enzyme activity was 55°C. The K_m value for XXXG (the letters G and X refer to an unbranched Glc residue and an α-D-Xyl*p*-(1→6)-β-D-Glc*p* segment, respectively) was determined to be 0.7 mM, and the specific activity was 85 U per mg protein. HPLC analysis revealed that IPase cleaves XXXG to X and XXG, then cleaves XXG to X and XG, and finally cleaves XG to X and G. Transglycosylation activity was also clearly evident; HPLC analysis revealed that the enzyme could transfer isoprimeverose to XXXG to produce XXXXG.

Key words: isoprimeverose-producing oligoxyloglucan hydrolase, xyloglucan, isoprimeverose

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