NC-109  SUGAR RELEASED FROM UNBLEACHED KRAFT PULPS BY XYLAN-BINDING ENDOXYLANASE OF THE ALKALIPHILIC Bacillus sp. K-1

นักวิจัย : ขิ่น เลย์ ติ่ง, ถนก รัตนะกนกชัย, มรกต ตันติเจริญ

เผยแพร่ : The 12th Annual Meeting of the Thai Society for Biotechnology, 1-3 พฤศจิกายน 2543, โรงแรมฟิลิกซ์, จ. กาญจนบุรี

The ability of purified xylan-binding endoxylanase of alkaliphilic Bacillus sp. K-l, to hydrolyze fiber-bound xylans in unbleached grass, hardwood and softwood kraft pulps was investigated. The xylan-binding endoxylanase was purified to homogeneity by affinity adsorption-desorption on insoluble xylan. The purified enzyme had a low molecular mass (23 kDa) with an ability to bind on insoluble xylan. It was also stable at alkaline pHs up to 12 and at the temperature of up to 50°C. The enzyme could degrade the xylans in lignocellulosic substances and insoluble xylan isolated from oat spelt. When unbleached grass, hardwood and softwood kraft pulps such as sugarcane bagasse, eucalyptus and pine pulps were treated with xylan-binding endoxylanase at the concentration of 10 U/g dry pulps at pH 9.0, the sugar released from those pulps were 67%, 49% and 43% of initial xylan present in kraft pulps respectively within 24h. The results indicated that xylan-binding endoxylanase could hydrolyze the fiber-bound xylans in grass, hardwood and softwood pulps due to the accessibility of fiber-bound xylans to the enzyme.