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Food Science and Technology Research Japanese Society for Food Science and Technology Available Issues **Publisher Site** Japanese Page Author: ADVANCED Volume Go Keyword: Search **TOP > Available Issues > Table of Contents > Abstract** ONLINE ISSN: 1881-3984 PRINT ISSN: 1344-6606 Food Science and Technology Research Vol. 12 (2006), No. 1 43-49

Synergy Between an α-L-Arabinofuranosidase from Aspergillus oryzae and an Endo-Arabinanase from Streptomyces coelicolor for **Degradation of Arabinan**

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(Received: December 13, 2005) (Accepted: February 7, 2006)

An α-L-arabinofuranosidase gene of Aspergillus oryzae was expressed in Pichia

pastoris. The re-combinant enzyme released L-arabinose from arabinose-containing polysaccharides such as lupin pectic galactan, corn hull arabinoxylan, sugar beet arabinan, and potato pectic galactan. The enzyme displayed an optimum activity at 45°C and pH 4.0. The enzyme was slowly inactivated above pH 6.0 and below pH 3.0, and was stable at temperatures up to 40°C. On the other hand, a putative endo-arabinanase gene of Streptomyces coelicolor was cloned and expressed in Escherichia coli. The recombinant enzyme hydrolyzed linear arabinans and produced α -1,5-arabinooligosaccharides. The enzyme displayed an optimum activity at 45°C and pH 6.0. The enzyme was slowly inactivated above pH 10.0 and below pH 4.0, and it was stable at temperatures up to 35° C. Synergisms between the α -L-arabinofuranosidase and the endo-arabinanase for the degradation of arabinan and debranched arabinan were observed. The hydrolysis was most efficient when α-L-arabinofuranosidase and endo-arabinanase were in a ratio of 95:5.

Keywords: arabinan, α -L-arabinofuranosidase, glycoside hydrolase family 43, glycoside hydrolase family 54, endo-arabinanase

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To cite this article:

Synergy Between an α-L-Arabinofuranosidase from Aspergillus oryzae and an Endo-Arabinanase from Streptomyces coelicolor for Degradation of Arabinan Hong YANG, Hitomi ICHINOSE, Mitsutoshi NAKAJIMA, Hideyuki KOBAYASHI and Satoshi KANEKO, FSTR. Vol. 12, 43-49. (2006).

doi:10.3136/fstr.12.43 JOI JST.JSTAGE/fstr/12.43

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