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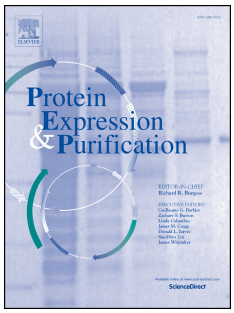

Purification and characterization of a novel intracellular α-amylase with a wide variety of substrates hydrolysis and transglycosylation activity from *Paenibacillus* sp. SSG-1

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PII: S1046-5928(16)30054-7

DOI: 10.1016/j.pep.2016.04.007

Reference: YPREP 4915

To appear in: *Protein Expression and Purification*

Received Date: 21 February 2016

Revised Date: 11 April 2016

Accepted Date: 17 April 2016

Please cite this article as: Q. Xu, Y. Cao, X. Li, L. Liu, S. Qin, Y. Wang, Y. Cao, H. Xu, D. Qiao, Purification and characterization of a novel intracellular α-amylase with a wide variety of substrates hydrolysis and transglycosylation activity from *Paenibacillus* sp. SSG-1, *Protein Expression and Purification* (2016), doi: 10.1016/j.pep.2016.04.007.

Purification and characterization of a novel intracellular α-amylase with a wide variety of substrates hydrolysis and transglycosylation activity from *Paenibacillus* sp. SSG-1

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Abstract

Intracellular α-amylase was a special glycoside hydrolase in the cytoplasm. We cloned and expressed an intracellular α-amylase, Amy, from *Paenibacillus* sp. SSG-1. The recombinant enzyme was purified by metal-affinity chromatography, exhibited a molecular mass of 71.7 kDa. Amy exhibited unexpectedly sequence similarity and evolutionary relationships with alpha-glucanotransferase. The docked results of Amy with maltose showed it had similar catalytic residues with α-amylase and glucanotransferase. The substrate specificity experiment showed that Amy could hydrolyze typical substrates into glucose and maltose. It was noteworthy that Amy showed the catalytic capacity of cyclomaltodextrinase and pullulanase. Meanwhile, Amy could transfer sugar

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