

GH62 arabinofuranosidases: Structure, function and applications - DTU Orbit (09/11/2017)

GH62 arabinofuranosidases: Structure, function and applications

Motivated by industrial demands and ongoing scientific discoveries continuous efforts are made to identify and create improved biocatalysts dedicated to plant biomass conversion. α -1,2 and α -1,3 arabinofuranosyl specific α -l-arabinofuranosidases (EC 3.2.1.55) are debranching enzymes catalyzing hydrolytic release of α -l-arabinofuranosyl residues, which decorate xylan or arabinan backbones in lignocellulosic and pectin constituents of plant cell walls. The CAZy database classifies α -l-arabinofuranosidases in Glycoside Hydrolase (GH) families GH2, GH3, GH43, GH51, GH54 and GH62. Only GH62 contains exclusively α -l-arabinofuranosidases and these are of fungal and bacterial origin. Twenty-two GH62 enzymes out of 223 entries in the CAZy database have been characterized and very recently new knowledge was acquired with regard to crystal structures, substrate specificities, and phylogenetics, which overall provides novel insights into structure/function relationships of GH62. Overall GH62 α -l-arabinofuranosidases are believed to play important roles in nature by acting in synergy with several cell wall degrading enzymes and members of GH62 represent promising candidates for biotechnological improvements of biofuel production and in various biorefinery applications.

General information

State: Published

Organisations: Department of Biotechnology and Biomedicine, Department of Chemical and Biochemical Engineering, Center for BioProcess Engineering, Enzyme and Protein Chemistry, CNRS, Aix Marseille Universite

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Pages: 792-804

Publication date: 2017

Main Research Area: Technical/natural sciences

Publication information

Journal: Biotechnology Advances

Volume: 35

ISSN (Print): 0734-9750

Ratings:

BFI (2017): BFI-level 2

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 2

Scopus rating (2016): CiteScore 11.05 SJR 2.681 SNIP 3.146

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 2

Scopus rating (2015): SJR 2.919 SNIP 3.432 CiteScore 10.56

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 2

Scopus rating (2014): SJR 2.922 SNIP 3.757 CiteScore 10.24

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 2

Scopus rating (2013): SJR 2.936 SNIP 4.028 CiteScore 10.71

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): SJR 3.552 SNIP 5.178 CiteScore 11.65

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): SJR 3.126 SNIP 4.726 CiteScore 10.75

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 2

Scopus rating (2010): SJR 2.928 SNIP 3.953

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 2

Scopus rating (2009): SJR 3.016 SNIP 4.447

BFI (2008): BFI-level 2

Scopus rating (2008): SJR 2.248 SNIP 3.162

Scopus rating (2007): SJR 2.101 SNIP 3.215

Scopus rating (2006): SJR 1.727 SNIP 3.036

Scopus rating (2005): SJR 1.607 SNIP 2.949

Web of Science (2005): Indexed yes

Scopus rating (2004): SJR 1.063 SNIP 2.238

Scopus rating (2003): SJR 1.215 SNIP 2.109

Scopus rating (2002): SJR 0.851 SNIP 1.873

Scopus rating (2001): SJR 0.573 SNIP 1.006

Scopus rating (2000): SJR 0.121 SNIP 1.044

Scopus rating (1999): SJR 0.123 SNIP 1.181

Original language: English

(1)H NMR of product formation, Arabinoxylan, Arabinoxylooligosaccharides, Glycoside hydrolase family 62, Phylogenetics , Substrate specificity, Surface binding site, Three-dimensional structures, l-Arabinan, α -l-Arabinofuranosidase

DOIs:

10.1016/j.biotechadv.2017.06.005

Source: FindIt

Source-ID: 2372226054

Publication: Research - peer-review › Journal article – Annual report year: 2017