

Recombinant Enzyme Product Specification Sheet

Cat. No.:	PRO-E0255
LOT:	2008-0255
Activity:	O-GlcNAcase
Synonyms:	Hexosaminidase; β -acetylaminodeoxyhexosidase; <i>N</i> -acetyl- β -D-hexosaminidase; <i>N</i> -acetyl- β -hexosaminidase; β -hexosaminidase; β -acetylhexosaminidase; β -D- <i>N</i> -acetylhexosaminidase; β - <i>N</i> -acetyl-D-hexosaminidase; β - <i>N</i> -acetylglucosaminidase; hexosaminidase A; <i>N</i> -acetylhexosaminidase; β -D-hexosaminidase; GlcNAcase; O-glycoprotein 2-acetamido-2-deoxy- β -D-glucopyranosidase
Nomenclature:	SPy1600, GH84, GH 84, glycoside hydrolase family 84
Source organism:	<i>Streptococcus pyogenes M1 GAS SF370</i>
Enzyme Commission No.:	3.2.1.52
Activity:	492 U/mL
Specific activity:	46.5 U/mg
	} (37°C; pH 7.6; pNP- <i>N</i> -acetyl- β -D-glucosaminide (8 mM))
Purity:	>95 % as judged by SDS-PAGE
Form and storage:	Supplied in 3.2 M ammonium sulphate, store at 4°C (shipped at room temperature)
pH optimum:	~ 7.6
Temperature optimum:	50°C (stable up to 50°C)
[Protein]:	10.58 mg/mL
Sequence length:	564 amino acids (view sequence)
Accession No.:	NP_269657.1 , Q99YP8
Molecular weight:	67487.4 Da (theoretical)
	~ 67000 Da (observed by SDS-PAGE)
	- (observed by mass spectrometry)
Biological function:	The expression of this enzyme is up-regulated during phagocytosis and thus a role in virulence is possible. As the enzyme is unlikely to be secreted, it is likely to be involved in the removal of GlcNAc from a variety of glycoconjugates that are imported into the bacterial cell during pathogenesis. Processing O-GlcNAc from endogenous group A streptococcal proteins within the host bacterium itself appears unlikely, given that no O-GlcNAc transferase-like sequence is present in the genome sequence of this strain. Its genomic

organization strongly supports a role in glycan foraging, although given its up-regulation during phagocytosis a direct role in the deglycosylation of human O-GlcNAc proteins for the purpose of compromising the host cell machinery can not be ruled out (Sheldon *et al.* (2006) *Biochem. J.* **399**, 241-247)

Potential application(s):

Biocatalysis, biochemistry, fundamental research

Comments:

The enzyme is only active against β -N-acetylglucosaminides and has no hyaluronidase activity. The enzyme also has been shown to remove O-GlcNAc from eukaryotic glycoproteins (Sheldon *et al.* (2006) *Biochem. J.* **399**, 241-247). No activity is observed with β -N-acetylgalactosaminides

Usage:

Agitate bottle sufficiently to fully homogenise enzyme precipitate before use

Assay:

One unit is defined as the amount of enzyme required to release 1 μ mol of pNP from pNP-N-acetyl- β -D-glucosaminide (8 mM) per minute in 20 mM HEPES buffer, pH 7.6, at 37°C, as measured at 410 nm

Primary sequence:

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MTIYHALKDYQEVMTRGDYLVFDTPLTCRFIGRFFRFENQKALLAELATSKYFQWIEEGQAEVTMKHFFN
RQLAKDAFTLKI SEDKEI I IESQNLRGFRYAQEALLKVMTFKGDKLYLP IVSVKHSPSFAMRGI IEGFYG
TPWTRERLDCLRFIGNKRMNTYMYAPKDDDYQRKLWRDLYPEDWVTYFKELLAVAKEEGLDFWYMISPG
LDFDYTKREADYQLLYQKLQQLLALGVCHFGLLLDDIDYQIVDAVERRFKKTAYAQAHLATEVHHFLNQQH
AAPELVICPTEYDNHHSIYLQELSERIPKEVAFFWTGPSTLASQISQADIETMAAVYQRPI I IWDNIPV
NDYQKDPERLFLTPFANRSPFLCQPDYQVKGIVSNPMISWELSKLTLTDMSHYLWDANRYQPSHSWLETL
TDYTEDTELALALQAFAWHNGNRHLHRDLPFVEVEEALLAKDVSTLSAWVAELVERVNTLRKLDKPAFQQA
IAPWFERVAKDQDFWQAMLNQEPQLETLYADLQEDKHRIGSDIPSRYYRIYYQQQDKLTANQGQVTQARP
EDYA
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Literature:

1. Sheldon *et al.* (2006) *Biochem. J.* **399**, 241-247