Prokazyme

Product number: Bgl162
Lot number: 162-01

# ThermoActive™ β-glucosidase B

## Product information

Recombinant β-glucosidase B from *Thermotoga neopolitana*.
Glycosidase hydrolase family 3 (GH3) - (Turner et al. 2007)
Available as freeze dried powder. ~90% pure (SDS PAGE)
Activity: 60 U/mg powder. Store at 4°C.
**Product Bgl162:** 100 units. Refer to www.prokazyme.com for price and availability.

## Enzyme activity

The enzyme catalyses deglycolysation and transglycolysation reactions with retaining mechanism. It transfers β-D glucose residues in disaccharides, alkyl glycosides or other aglycone-linked glycosides to water (hydrolysis) or to alcohols depending on reaction conditions. The enzyme has optimum activity at 90°C (Fig. 1) and pH between 5 and 6.

## Assay

Glycosidase activity was determined at 85°C in a 20 mM citrate phosphate buffer at pH 5.6 and incubated for 5 minutes with 2.92 mM final concentration of p-nitrophenyl-β-D-glucanopyranoside.

## Unit definition

One unit (U) of enzyme activity is the amount that leads to the release of 1 µmol of p-nitrophenyl from p-nitrophenyl-β-D-glucanopyranoside (pNPG) per minute.

## Applications

**Polyphenol glycoside hydrolysis:** The enzyme may be used for hydrolysis of various glycosides such as polyphenol glycosides including naturally occurring antioxidants such as quercetin-glycosides found in various vegetables (Fig. 2). For complete hydrolysis of 1 µmol of quercetin-4-glycoside in 5 minutes at 80°C and pH 5.5, about 28 pmol (~25 µg) enzyme was needed (Turner et al 2006)
**Alkyl glycoside synthesis:** The enzyme may be used for transglycolysation with alcohols as acceptors such as in synthesis of alkyl glycosides. At 60°C, the ratio of alcoholysis to hydrolysis is 5.1 with a pNPG conversion rate of 153U/mg whereas at 90°C the ratio of alcoholysis to hydrolysis is 4.5 and the pNPG conversion rate of is 831U/mg. (Turner et al. 2007)

## Research & Development

This product is made in cooperation with Prof. Eva Nordberg Karlsson, Dept. of Biotechnology, Lund University, Sweden.

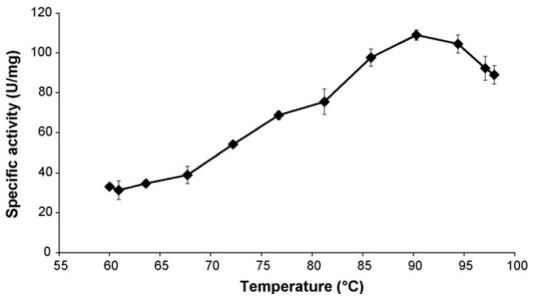


*Figure 1.* Temperature profile

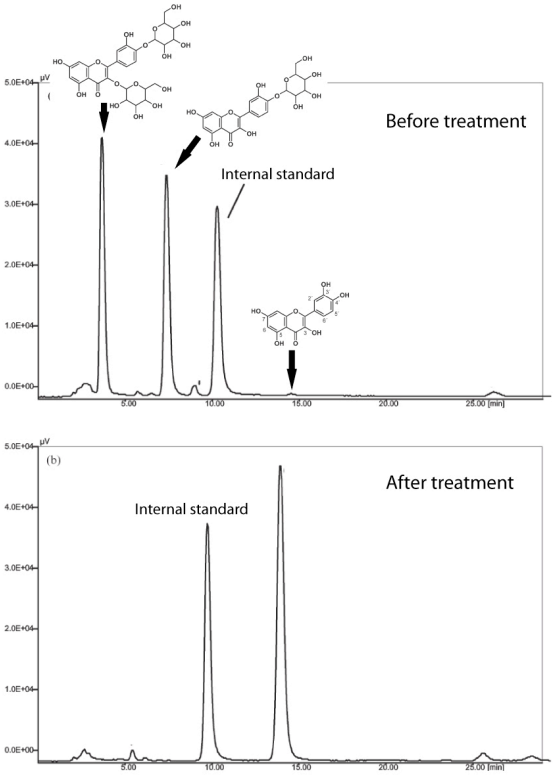


*Figure 2.* Enzymatic treatment of polyphenol glycosides

## References

Turner, C., Turner, P., Jacobson, G., Waldebäck, M., Sjöberg, P., Nordberg Karlsson, E. & Markides, K. (2006). Subcritical water extraction and β-glucosidase catalyzed hydrolysis of quercetin in onion waste. *Green Chem*. **8**: 949–959.

Turner, P., Svensson, D., Adlercreutz, P. & Karlsson,E. N. (2007). A novel variant of Thermotoga neapolitana β-glucosidase B is an efficient catalyst for the synthesis of alkyl glucosides by transglycosylation. *J. Biotechnol*.**130**: 67–74.



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