**β1-3 Galactosidase**

**Description:** β1-3 Galactosidase is a highly specific exoglycosidase that catalyzes the hydrolysis of β1-3 and, at a much lower rate, β1-6 linked α-galactopyranosyl residues from oligosaccharides. The approximate kinetic data show > 100-fold preference for β1-3 over β1-6 linkages (1,2) and > 500-fold preference from β1-3 over β1-4 linkages (3).

**Specificity:**
- Gal β 1-3 R
- β 1-6 R
- β 1-4 R

**Figure 1:** Selling concentration of the enzyme will cut the β1-4Galactose linkage as shown in (A) due to the adjacent GlcNAc(β1-6) anomer. This cleavage will not occur if the selling concentration of the enzyme is diluted 16-fold, as shown in (B).

**Source:** Cloned from Xanthomonas manihotis and expressed in E. coli (4).

**Supply:** 50 mM NaCl, 20 mM Tris-HCl (pH 7.5 @ 25°C) and 0.1 mM Na2EDTA.

**Reagents Supplied with Enzyme:** 10X G2 Reaction Buffer 100X BSA

**Reaction Conditions:** 1X G2 Reaction Buffer: 50 mM Sodium Citrate (pH 4.5 @ 25°C) Supplement with 100 µg/ml BSA. Incubate at 37°C.

**Quality Assurance**
- No contaminating endoglycosidase or proteolytic activity could be detected.

**Quality Control Assays**
- Glycosidase Assay: 100 units of β1-3 Galactosidase were incubated with 0.1 mM of fluorescently-labeled oligosaccharides and glycopeptides, in a 10 µl reaction for 20 hours at 37°C. The reaction products were analyzed by TLC for digestion of substrate.

**Specific Activity:** 17,000 units/mg

**Molecular Weight:** 66,000 daltons

**Unit Definition Assay:** Two fold dilutions of β1-3 Galactosidase are incubated with 1 nmol AMC-labeled substrate in 1X G2 Reaction Buffer, supplemented with 100 µg/ml BSA, in a 10 µl reaction. The reaction mix is incubated for 1 hour at 37°C. Separation of reaction products are visualized via thin layer chromatography (1).

**Specific Activity:** 17,000 units/mg

**Molecular Weight:** 66,000 daltons

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**Quality Control Assays**
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(See other side)
Physical Purity: Purified to > 95% homogeneity as determined by SDS-PAGE analysis using Coomassie Blue detection.

No other glycosidase activities were detected (ND) with the following substrates:

**β-N-Acetyl-glucosaminidase:**
GlcNAcβ1-4GlcNAcβ1-4GlcNAC-AMC ND

**α-Fucosidase:**
(Fucx1-3)GlcNAcβ1-3Galβ1-4Glc-AMC ND

**α-Galactosidase:**
Galβ1-3Galβ1-4Glc-AMC ND

**α-Neuraminidase:**
Neu5Acβ2-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc-AMC ND

**α-Mannosidase:**
Manβ1-3Manβ1-4Man-AMC ND

**β-Glucosidase:**
Glcβ1-4Glcβ1-4Glc-AMC ND

**β-Xylosidase:**
Xylβ1-4Xylβ1-4Xylβ1-4Xyl-AMC ND

**β-Mannosidase:**
Manβ1-4Manβ1-4Man-AMC ND

**Endo F, F, H:**
Dansylated invertase high mannose. ND

**Endo F, F, F:**
Dansylated fibrinogen biantennary. ND

**PNGase F:**
Fluoresceinated fetuin triantennary. ND

**Protease Assay:**
After incubation of 100 units of β1-3 Galactosidase with 0.2 nmol of a standard mixture of proteins in a 20 µl reaction, for 20 hours at 37°C, no proteolytic activity could be detected by SDS-PAGE.

**Note:** Recommended storage temperature has changed to −20°C.

References:

U.S. Patent No. 7,094,563