Product Information

β-Glucuronidase from limpets (*Patella vulgata*)

Type L-II, lyophilized powder, 1,000,000-3,000,000 units/g solid

G8132

Product Description

CAS Registry Number: 9001-45-0

Enzyme Commission (EC) Number: 3.2.1.31

Synonyms: β-D-Glucuronide glucuronosohydrolase

Glucuronidation, or conjugation with glucuronic acid, by the human UDP-glucuronosyltransferase (UGT) family of enzymes plays an important role in the metabolic fate of many drugs and other xenobiotics. This biosynthetic reaction also has a role in the conjugation and excretion of endogenous substrates, such as steroids, bilirubin, and bile acids.[1] UGT activity results in the conjugation of glucuronic acid to substrates that contain sulfhydryl, hydroxyl, aromatic amino, or carboxylic acid moieties. The resulting glucuronides are more polar (water-soluble) than the parent organic substrate and are generally excreted through the kidney.

β-glucuronidase catalyzes the general reaction:

$$\beta\text{-D-glucuronoside} + H_2O \leftrightarrow \text{an alcohol} + \text{D-glucuronate}$$

β-Glucuronidase Type L-II is useful for the hydrolysis of drug-glucuronides from urine.[2,3] This enzyme preparation was found to be cost-effective and thermostable, and can be used at a temperature high enough to allow for a shorter incubation time compared to the enzyme from snail or bovine.[2] Although the exact amount needed will depend on the specific conditions used and must be determined empirically, complete hydrolysis of morphine glucuronide was reported following a 3-hour incubation at 65 °C with 5,000 units of the enzyme per mL of urine.[2] Another report found the optimal conditions for hydrolysis of conjugated steroid metabolites to be a one-hour incubation at 55 °C at pH 5.2, using 600 units of enzyme per mL of urine.[4]

β-Glucuronidase Type L-II from keyhole limpet is a crude solution of enzymes. Many β-glucuronidases derived from mollusks also contain sulfatase activity. For this reason, sulfatase activity is also determined.

Several publications[5-11] theses,[12] and dissertations[13,14] have cited use of product G8132 in their protocols.

Optimal pH

- Glucuronidase activity: 4.5 to 5.0
- Sulfatase activity: ~6.2

Inhibitors

- D-glucuronic acid (Cat. No. G5269)
- D-galacturonic acid (Cat. No. 48280)
- D-glucaro-1,4-lactone

Substrates

- 5-Bromo-6-chloro-3-indolyl β-D-glucuronide (Cat. No. B4532)
- 6-Bromo-2-naphthyl β-D-glucuronide (Cat. No. B7877)
- 5-Bromo-4-chloro-3-indolyl β-D-glucuronide sodium salt tablet (Cat. No. B8174)
- 8-Hydroxyquinoline glucuronide sodium salt (Cat. No. 38153)
- 4-Methylumbelliferyl β-D-glucuronide (Cat. No. M9130)
- 4-Nitrophenyl β-D-glucuronide (Cat. Nos. N1627, 73677)

Glucuronidase Activity

1,000,000–3,000,000 units per gram solid

Unit Definition: One Sigma or modified Fishman unit will liberate 1.0 µg of phenolphthalein from phenolphthalein glucuronide per hour at 37 °C at pH 5.0 (30-minute assay).

Sulfatase Activity

Reported on the Certificate of Analysis (CofA)

Unit Definition: One unit of sulfatase will hydrolyze 1.0 µmole of *p*-nitrocatechol sulfate per hour at pH 5.0 at 37 °C.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the product at –20 °C. When stored at –20 °C, the enzyme retains activity for at least 3 years.

References

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