

Product Information

β -Glucuronidase

Type H-1

from *Helix pomatia*

Product Number **G 0751**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS# 9001-45-0

EC 3.2.1.31

Synonyms: β -D-Glucuronide glucuronosohydrolase

Product Description

Glucuronidation, 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 containing sulfhydryl, hydroxyl, aromatic amino, or carboxylic acid moieties. The glucuronides formed are more polar (water soluble) than the parent organic substrate and are generally excreted through the kidney.

β -glucuronidase catalyzes the reaction:

β -D-glucuronoside + $\text{H}_2\text{O} \leftrightarrow$ an alcohol + D-glucuronate

β -Glucuronidase Type H-1 has been used for the enzymatic hydrolysis of these metabolites from urine,²⁻⁴ plasma,⁵ serum,^{6,7} and bile⁸ prior to analysis by various means. The enzyme has also been used for the digestion of fungal mycelium.⁹ Typically, between 1 and 20 units of glucuronidase is used per μl of plasma, urine, or bile for the enzymatic hydrolysis of glucuronides present in these samples.²⁻⁸ The exact amount needed will depend on the specific conditions used and must be determined empirically.

β -Glucuronidase Type H-1 from *Helix pomatia* is a partially purified, essentially salt-free powder of enzymes derived from the Roman snail. Many β -glucuronidases derived from mollusks also contain sulfatase activity. For this reason, sulfatase activity of this preparation is also determined.

Optimal pH:

glucuronidase activity	4.5 to 5.0
sulfatase activity	-6.2

Inhibitors:

D-glucuronic acid
(Product No. G 5269)
D-galacturonic acid
D-glucaro-1, 4-lactone

Substrates:

5-Bromo-6-chloro-3-indolyl β -D-glucuronide	B 4532
6-Bromo-2-naphthyl β -D-glucuronide	B 6519
5-Bromo-4-chloro-3-indolyl β -D-glucuronide sodium salt tablet	B 8174
8-Hydroxyquinoline glucuronide	H 1254
4-Methylumbelliferyl β -D-glucuronide	M 5664
4-Nitrophenyl β -D-glucuronide	73677

Glucuronidase Activity: $\geq 300,000$ units/gm solid

Unit Definition: One Sigma or modified Fishman unit will liberate 1.0 μg of phenolphthalein from phenolphthalein glucuronide per hour at $37\text{ }^{\circ}\text{C}$ at pH 5.0 (30 min assay).

Sulfatase Activity: $\geq 10,000$ units/gm solid

Unit Definition: One unit of sulfatase will hydrolyze 1.0 μmole p-nitrocatechol sulfate per hour at pH 5.0 at $37\text{ }^{\circ}\text{C}$.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the product at –20 °C.

References

1. Tephly, T.R., *et al.*, *Adv. Pharmacol.*, **42**, 343-346 (1998).
2. Vogt, B., *et al.*, *Nephrol. Dial. Transplant*, **17**, 753-758 (2002).
3. LeBeau, M.A., *et al.*, *J. Forensic Sci.*, **45**, 1133-1141 (2000).
4. Santos, A., *et al.*, *Clin. Cancer Res.*, **6**, 2012-2020 (2000).
5. Sugimoto, T., *et al.*, *Xenobiotica*, **29**, 803-814 (1999).
6. Dalu, A., *et al.*, *Prostate*, **37**, 36-43 (1998).
7. Lamartiniere, C.A., *et al.*, *Tox. Sci.*, **65**, 228-238 (2002).
8. Pozzi, E.J.S., *et al.*, *J. Pharmacol. Exp. Therap.*, **306**, 279-286 (2003).
9. Thevissen, K., *et al.*, *J. Biol. Chem.*, **272**, 32176-32181 (1997).

AC,MAM 03/05-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.