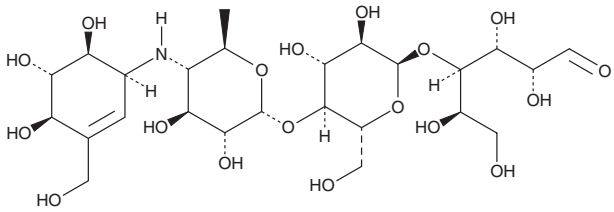
PRODUCT INFORMATION

Acarbose

Item No. 11885

CAS Registry No.: 56180-94-0
Formal Name: O-4,6-dideoxy-4-[[(1S,4R,5S,6S)-4,5,6-trihydroxy-3-(hydroxymethyl)-2-cyclohexen-1-yl]amino]-α-D-glucopyranosyl-(1→4)-O-α-D-glucopyranosyl-(1→4)-D-glucose
Synonym: BAY-g 5421
MF: $C_{25}H_{43}NO_{18}$
FW: 645.6
Purity: ≥98%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Acarbose is supplied as a crystalline solid. A stock solution may be made by dissolving the acarbose in the solvent of choice, which should be purged with an inert gas. Acarbose is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of acarbose in these solvents is approximately 20 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of acarbose can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of acarbose in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Acarbose is an oligosaccharide and inhibitor of α-glucosidases (IC_{50}s = 0.16 and 2.9 µM for maltase and sucrase, respectively).[1] It also activates phosphorylase kinase in a cell-free assay when used at a concentration of 250 µM.[2] Acarbose (40 mg/kg in the diet) decreases urine levels of glucose and glycosylated hemoglobin, as well as glomerular mesangial thickening in a *db/db* mouse model of diabetic nephropathy.[3] It reduces sucrose-induced increases in infarct size as a percentage of the area at risk and serum malondialdehyde (MDA) levels in a mouse model of cardiac ischemia-reperfusion injury induced by coronary artery ligation when administered at a dose of 10 mg/kg.[4]

References

1. Natori, Y., Imahori, T., Murakami, K., *et al*. The synthesis and biological evaluation of 1-C-alkyl-L-arabinoiminofuranoses, a novel class of α-glucosidase inhibitors. *Bioorg. Med. Chem. Lett.* **21(2)**, 738-741 (2011).
2. Nadeau, O.W., Liu, W., Boulatnikov, I.G., *et al*. The glucoamylase inhibitor acarbose is a direct activator of phosphorylase kinase. *Biochemistry* **49(31)**, 6505-6507 (2010).
3. Lee, S.M. The effect of chronic α-glycosidase inhibition on diabetic nephropathy in the *db/db* mouse. *Diabetes* **31(3)**, 249-254 (1982).
4. Frantz, S., Calvillo, L., Tillmanns, J., *et al*. Repetitive postprandial hyperglycemia increases cardiac ischemia/reperfusion injury: Prevention by the α-glucosidase inhibitor acarbose *FASEB J.* **19(6)**, 591-593 (2005).

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