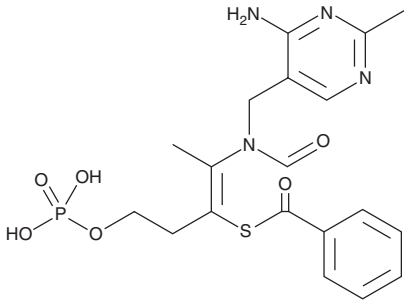
PRODUCT INFORMATION

Benfotiamine

Item No. 22192

CAS Registry No.:	22457-89-2
Formal Name:	benzenecarbothioic acid, S-[2-[[(4-amino-2-methyl-5-pyrimidinyl)methyl]formylamino]-1-[2-(phosphonooxy)ethyl]-1-propen-1-yl] ester
Synonym:	Benzoylthiamine monophosphate
MF:	$C_{19}H_{23}N_4O_6PS$
FW:	466.5
Purity:	≥98%
UV/Vis.:	λ_{max}: 243 nm
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

Benfotiamine is supplied as a crystalline solid. A stock solution may be made by dissolving the benfotiamine in the solvent of choice, which should be purged with an inert gas. Benfotiamine is soluble in the organic solvent DMSO. It is also soluble in ammonium hydroxide. Benfotiamine is slightly soluble in DMSO and has a solubility of approximately 1 mg/ml in a 0.1 M solution of ammonium hydroxide using this method.

Description

Benfotiamine is a lipid-soluble form of vitamin B_1 (thiamine).[1] *In vitro*, it corrects defective replication of, and prevents formation of advanced glycosylation end products (AGEs) in, human umbilical vein endothelial cells (HUVECs) grown under high glucose conditions.[2] *In vivo*, administration of benfotiamine increases nerve conduction velocity (NCV) and prevents microalbuminuria, proteinuria, and formation of AGEs in mice with streptozotocin-induced diabetes.[1,3] Benfotiamine reduces liver levels of aspartate and alanine aminotransferases, markers of hepatic damage, and lipid peroxidation in a rat model of acute ethanol intoxication.[4] Administration of benfotiamine reduces the number of amyloid plaques and amount of phosphorylated tau in a transgenic mouse model of Alzheimer's disease.[5] It also improves spatial memory performance in the Morris water maze.

References

1. Stracke, H., Hammes, H.P., Werkmann, D., *et al.* Efficacy of benfotiamine versus thiamine on function and glycation products of peripheral nerves in diabetic rats. *Exp. Clin. Endocrinol. Diabetes* **109(6)**, 330-336 (2001).
2. Pomero, F., Molinar Min, A., La Selva, M., *et al.* Benfotiamine is similar to thiamine in correcting endothelial cell defects induced by high glucose. *Acta. Diabetol.* **38(3)**, 135-138 (2001).
3. Babaei-Jadidi, R., Karachalias, N., Ahmed, N., *et al.* Prevention of incipient diabetic nephropathy by high-dose thiamine and benfotiamine. *Diabetes* **52(8)**, 2110-2120 (2003).
4. Portari, G.V., Ovidio, P.P., Deminice, R., *et al.* Protective effect of treatment with thiamine or benfotiamine on liver oxidative damage in rat model of acute ethanol intoxication. *Life Sci.* **162**, 21-24 (2016).
5. Pan, X., Gong, N., Zhao, J., *et al.* Powerful beneficial effects of benfotiamine on cognitive impairment and beta-amyloid deposition in amyloid precursor protein/presenilin-1 transgenic mice. *Brain* **133(Pt 5)**, 1342-1351 (2010).

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