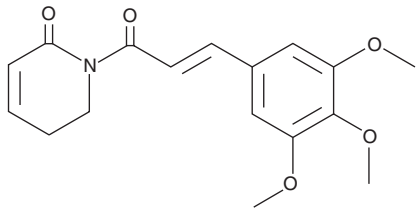
PRODUCT INFORMATION

Piperlongumine

Item No. 11006

CAS Registry No.:	20069-09-4
Formal Name:	5,6-dihydro-1-[(2E)-1-oxo-3-(3,4,5-trimethoxyphenyl)-2-propen-1-yl]-2(1H)-pyridinone
Synonym:	Piplartine
MF:	$C_{17}H_{19}NO_5$
FW:	317.3
Purity:	≥98%
UV/Vis.:	λ_{max}: 221, 327 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥2 years
Item Origin:	Plant/*Piper longum*



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

Laboratory Procedures

Piperlongumine is supplied as a crystalline solid. A stock solution may be made by dissolving the piperlongumine in the solvent of choice, which should be purged with an inert gas. Piperlongumine is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of piperlongumine in ethanol is approximately 0.15 mg/ml and approximately 20 mg/ml in DMSO and DMF.

Piperlongumine is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, piperlongumine should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Piperlongumine has a solubility of approximately 0.1 mg/ml in a 1:10 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Piperlongumine is an alkaloid that has been found in *P. longum* and has anticancer and antioxidant activities.[1-3] It binds to glutathione (GSH) and inhibits the protein-protein interaction between glutathione and glutathione S-transferase pi 1 (GSTP1), an enzyme that is often overexpressed in cancer cells.[3] Piperlongumine reduces the viability of A549 and NCI H460 cells (IC_{50}s = 14.91 and 13.72 µM, respectively).[1] It also induces apoptosis and inhibits the DNA binding activity of NF-κB in A549 and NCI H460 cells. Piperlongumine (2.5 and 5 mg/kg twice per week) reduces tumor growth in an A549 mouse xenograft model. It also reduces plasma glucose levels, as well as plasma and pancreatic levels of thiobarbituric acid reactive substances (TBARS) and lipid hydroperoxides in a rat model of diabetes induced by streptozotocin (Item No. 13104).[2]

References

1. Zheng, J., Son, D.J., Gu, S.M., *et al.* Piperlongumine inhibits lung tumor growth via inhibition of nuclear factor kappa B signaling pathway. *Sci. Rep.* **6**, 26357 (2016).
2. Xu, P., Xiao, J., and Chi, S. Piperlongumine attenuates oxidative stress, inflammatory, and apoptosis through modulating the GLUT-2/4 and AKT signaling pathway in streptozotocin-induced diabetic rats. *J. Biochem. Mol. Toxicol.* **35(6)**, 1-12 (2021).
3. Harshbarger, W., Gondi, S., Ficarro, S.B., *et al.* Structural and biochemical analyses reveal the mechanism of glutathione S-transferase pi 1 inhibition by the anti-cancer compound piperlongumine. *J. Biol. Chem.* **292(1)**, 112-120 (2017).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM