

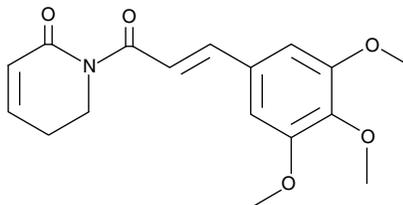
# Product Information



## 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<sub>17</sub>H<sub>19</sub>NO<sub>5</sub>  
**FW:** 317.3  
**Purity:** ≥98%  
**Stability:** ≥2 years at -20°C  
**Supplied as:** A crystalline solid  
**UV/Vis.:** λ<sub>max</sub>: 221, 327 nm



### Laboratory Procedures

For long term storage, we suggest that piperlongumine be stored as supplied at -20°C. It should be stable for at least two years.

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

Cancer cell survival appears partly dependent on antioxidative enzymes, whose expression is regulated by the Keap1-Nrf2 pathway, to quench potentially toxic reactive oxygen species (ROS) generated by their metastatic transformation.<sup>1</sup> Piperlongumine, isolated from the *Piper longum* L. plant, is a small molecule that selectively increases the level of ROS and apoptosis in cancer cells but not in normal cells. At concentrations less than 15 μM, piperlongumine induces cell death, upregulating proapoptotic genes, and repressing pro-survival genes.<sup>2</sup> In established bladder, breast, lung, and melanoma tumor xenografts in mice, piperlongumine administered daily at 2.4 mg/kg for 2 weeks inhibits tumor growth and angiogenesis.<sup>2</sup> Piperlongumine increases ROS in both cancer cells and normal cells engineered to have a cancer genotype by selectively binding to proteins known to regulate redox and ROS homeostasis.<sup>2</sup> Previously, piperlongumine has been used as a crude treatment to improve poor blood circulation. It affects platelet function in rabbits by inhibiting platelet aggregation induced by the thromboxane A<sub>2</sub> agonist U-46619 with a K<sub>i</sub> value of 6.8 μM.<sup>3</sup>

### References

1. DeNicola, G.M., Karreth, F.A., Humpton, T.J., *et al.* Oncogene-induced Nrf2 transcription promotes ROS detoxification and tumorigenesis. *Nature* **475**(7354), 106-109 (2011).
2. Raj, L., Ide, T., Gurkar, A.U., *et al.* Selective killing of cancer cells by a small molecule targeting the stress response to ROS. *Nature* **475**, 231-234 (2011).
3. Iwashita, M., Oka, N., Ohkubo, S., *et al.* Piperlongumine, a constituent of *Piper longum* L., inhibits rabbit platelet aggregation as a thromboxane A<sub>2</sub> receptor antagonist. *Eur. J. Pharmacol.* **570**(1-3), 38-42 (2007).

### Related Products

For a list of related products please visit: [www.caymanchem.com/catalog/11006](http://www.caymanchem.com/catalog/11006)

**WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

#### SAFETY DATA

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