

## Product Data Sheet

Product Name: Iberin  
Cat. No.: GC17287

### Chemical Properties

Cas. No. 505-44-2

Chemical Name 1-isothiocyanato-3-(methylsulfinyl)-propane

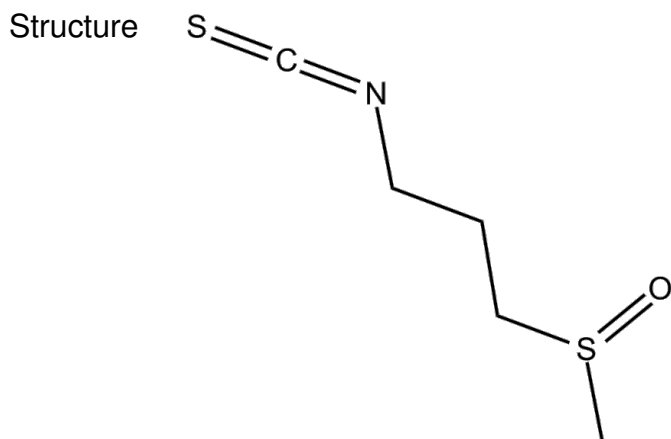
SMILES CS(CCCN=C=S)=O

Formula  $C_5H_9NOS_2$  M.Wt 163.3

Solubility  $\leq 11$ mg/ml in ethanol; 16mg/ml in DMSO; 16mg/ml in dimethyl formamide  
Storage Store at  $-20^{\circ}C$

General tips For obtaining a higher solubility , please warm the tube at  $37^{\circ}C$  and shake it in the ultrasonic bath for a while. Stock solution can be stored below  $-20^{\circ}C$  for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.



### Protocol

**Caution: Product has not been fully validated for medical applications. For research use only.**

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**Cell experiment:** Cells are plated at a density of  $1 \times 10^5$  cells/well in microtiter plates and treated with different concentrations of iberin (1, 2.5, 10 and 25  $\mu$ M). Then 20  $\mu$ L of 5 mg/mL MTT in PBS, is added to each well and allowed to incubate for a further 4 h. After 4 h of incubation, 100  $\mu$ L of DMSO is added to each well to dissolve the formazan crystals. Absorbance values at 550 nm are measured with a microplate reader[2].

**Animal experiment:** Rats: Groups of five rats are dosed by oral intubation with the test compounds, as solutions in soybean oil, each day for 5 days. This doses used are 4.0 mg/kg/day for AITC, 5.9 mg/kg/day for iberverin, 6.5 mg/kg/day for iberin, 6.4 mg/kg/day for erucin, 7.1 mg/kg/day for sulforaphane, and 7.2 mg/kg/day for cheirolin. The volume of solution administered is 2 mL/kg in all cases. Ten control rats are dosed with soybean oil alone[5]. Mice: Iberin is diluted in 96% ethanol to a concentration of 32 mg/mL followed by a 40x dilution in 0.9% NaCl. The mice are injected with 0.2 mL of the final solution, corresponding to 8  $\mu$ g/g of body weight. The placebo group is injected with a 2.4% ethanol solution (96% ethanol–0.9% NaCl) corresponding to the amount of ethanol that the iberin-treated group received. Mice are treated every 12 h from day 2 preinsertion to day 2 postinsertion, and treatment is continued until 12 h before the mice are euthanized[4].

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### References:

- [1]. Jakubikova J, et al. Isothiocyanates induce cell cycle arrest, apoptosis and mitochondrial potential depolarization in HL-60 and multidrug-resistant cell lines. *Anticancer Res.* 2005 Sep-Oct;25(5):3375-86.
- [2]. Jadhav U, et al. Iberin induces cell cycle arrest and apoptosis in human neuroblastoma cells.
- [3]. Jadhav U, et al. Dietary isothiocyanate iberin inhibits growth and induces apoptosis in human glioblastoma cells. *J Pharmacol Sci.* 2007 Feb;103(2):247-51.
- [4]. Jakobsen TH, et al. Food as a source for quorum sensing inhibitors: iberin from horseradish revealed as a quorumsensing inhibitor of *Pseudomonas aeruginosa*. *Appl Environ Microbiol.* 2012 Apr;78(7):2410-21.
- [5]. Munday R, et al. Induction of phase II detoxification enzymes in rats by plant-derived isothiocyanates: comparison of allyl isothiocyanate with sulforaphane and related compounds. *J Agric Food Chem.* 2004 Apr 7;52(7):1867-71.

### Background

Iberin is a phase II detoxification enzyme inducer.

Phase II enzymes are found to protect against chemical carcinogenesis, and the selectivity of isothiocyanates in inducing such enzymes is of interest in view of recent epidemiological studies showing a decreased incidence of cancer.

In vitro: Previous study found that the treatment of neuroblastoma cells with iberin led to a dose- and time-dependent growth inhibition, increased cytotoxicity, and G1 or G2 cell cycle arrest. The iberin-induced cell cycle arrest was related to the inhibition of Cdk2, Cdk4, and Cdk6 protein expression. DNA-staining pattern analyses revealed an increase in apoptotic cell death in iberin-treated cells, and FLICA staining found that iberin could induce apoptosis, which was associated with the activation of PARP, caspase-9, and caspase-3 [1].

In vivo: In animal study, the ability of iberin was tested to increase tissue levels of the phase II enzymes quinone reductase (QR) and glutathione S-transferase (GST). At the low dose level employed (40 µmol/kg/day), cheirolin was without effect in any tissue. Results showed that iberin was able to increase the activities of GST and QR in the forestomach, duodenum, and/or the urinary bladder of the rats, with the greatest effects being observed in the urinary bladder. However, little

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difference was observed in the inductive activity of iberin and its various isothiocyanate analogs [2].

Clinical trial: Up to now, Iberin is still in the preclinical development stage.

### References:

- [1] Jadhav U, Ezhilarasan R, Vaughn SF, Berhow MA, Mohanam S. Iberin induces cell cycle arrest and apoptosis in human neuroblastoma cells. *Int J Mol Med*. 2007 Mar;19(3):353-61.
- [2] Munday R, Munday CM. Induction of phase II detoxification enzymes in rats by plant-derived isothiocyanates: comparison of allyl isothiocyanate with sulforaphane and related compounds. *J Agric Food Chem*. 2004 Apr 7;52(7):1867-71.

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