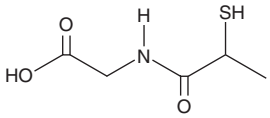
PRODUCT INFORMATION

Tiopronin

Item No. 23720

CAS Registry No.:	1953-02-2
Formal Name:	N-(2-mercapto-1-oxopropyl)-glycine
Synonyms:	BRN 1859822, (±)-Tiopronin
MF:	$C_5H_9NO_3S$
FW:	163.2
Purity:	≥98%
Supplied as:	A 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

Tiopronin is supplied as a solid. A stock solution may be made by dissolving the tiopronin in the solvent of choice, which should be purged with an inert gas. Tiopronin is slightly soluble in DMSO and methanol.

Description

Tiopronin is an antioxidant that has diverse biological activities.[1-5] It reduces free radical production by murine macrophages and granulocytes *in vitro* in a dose-dependent manner.[1] Tiopronin induces expression of hypoxia-inducible factor 1α (HIF-1α) and increases VEGF secretion in human colon carcinoma cells.[2] Rectal administration (500 µL of a 10 mM solution) reduces myeloperoxidase activity and reduces pro-inflammatory cytokine production in the colon in a rat model of colitis. Tiopronin (80-320 mg/kg per day) reduces the incidence of cleft palate in fetuses born to female mice orally exposed to teratogenic methylmercury chloride.[3] Tiopronin (100 mg/kg) reduces heme oxygenase 1 mRNA expression, lipid peroxidation, and transverse aortic constriction in a mouse model of cardiac hypertrophy.[4] Tiopronin (20 mg/kg) is hepatoprotective, increasing activity of the antioxidant enzymes superoxide dismutase and glutathione peroxidase and reversing hepatocyte degeneration in a rat model of high-fat diet-induced non-alcoholic steatohepatitis.[5] Formulations containing tiopronin have been used in the treatment of cystinuria, an inborn error of metabolism characterized by kidney stones and excessive urinary excretion of cysteine, arginine, ornithine, and lysine.

References

1. Rommain, M., Delecoeuillerie, G., Paul, J.L., *et al.* Inhibitory action of tiopronin on free radicals. *Rev. Rhum. Mal. Osteoartic.* **56(5 Pt 2)**, 34-37 (1989).
2. Yum, S., Park, H., Hong, S., *et al.* N-(2-mercaptopropionyl)-glycine, a diffusible antioxidant, activates HIF-1 by inhibiting HIF prolyl hydroxylase-2: Implication in amelioration of rat colitis by the antioxidant. *Biochem. Biophys. Res. Commun.* **443(3)**, 1008-1013 (2014).
3. Fujimoto, T., Fuyuta, M., Kiyofuji, E., *et al.* Prevention by tiopronin (2-mercaptopropionyl glycine) of methylmercuric chloride-induced teratogenic and fetotoxic effects in mice. *Teratology* **20(2)**, 297-301 (1979).
4. Date, M.O., Morita, T., Yamashita, N., *et al.* The antioxidant N-2-mercaptopropionyl glycine attenuates left ventricular hypertrophy in in vivo murine pressure-overload model. *J. Am. Coll. Cardiol.* **39(5)**, 907-912 (2002).
5. Wang, J.Q., Zou, Y.H., Huang, C., *et al.* Protective effects of tiopronin against high fat diet-induced non-alcoholic steatohepatitis in rats. *Acta. Pharmacol. Sin.* **33(6)**, 791-797 (2012).

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