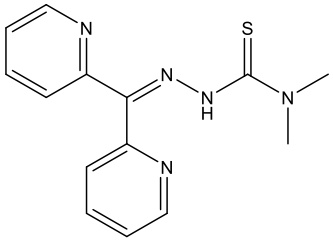
Catalog # 10-4951
Dp44mT

CAS# 152095-12-0

3-(Dipyridin-2-ylmethylideneamino)-1,1-dimethylthiourea

Lot # FBS2068



Dp44mT is a metal chelator with potent antitumor activity.[1,2] It displayed an average IC_{50} of 30 nM over 28 cancer cell lines (IC_{50} range was 5 nM to 400 nM).[2] Dp44mT retained its antiproliferative activity in both etoposide-resistant MCF-7/VP clones (MCF-7 breast cancer cells) and vinblastine-resistant KB-VB1 clones (KB3-1 epidermoid carcinoma cells) with an IC_{50} = 12 nM for both lines.[2] The potency of Dp44mT has been attributed to the high redox activity of the Dp44mT-Fe complex leading to cytotoxic ROS generation. The antitumor activity of Dp44mT may also be mediated by a redox active copper complex that causes cellular glutathione depletion and lysosomal damage.[3,4] It also inhibited T-cell activation and prevented CD25 up-regulation *via* a copper-dependent mechanism.[5] Dp44mT has recently been shown to effectively inhibit c-Met though metalloprotease-mediated cleavage and lysosomal degradation.[6]

1) Yuan *et al.* (2004), *Novel di-2-pyridyl-derived iron chelators with marked and selective antitumor activity: in vitro and in vivo assessment*; Blood, **104** 1450
2) Whitnall *et al*. (2006), *A class of iron chelators with a wide spectrum of potent antitumor activity that overcomes resistance to chemotherapeutics*., Proc. Natl. Acad. Sci. USA **103** 14910
3) Lovejoy *et al*. (2011), *Antitumor activity of metal-chelating compound Dp44mT is mediated by formation of a redox-active copper complex that accumulates in lysosomes*; Cancer Res., **71** 5871
4) Gutierrez *et al*. (2014), *The anticancer agent di-2-pyridylketone 4,4-dimethyl-3-thiosemicarbzone (Dp44mT) overcomes prosurvival autophagy by two mechanisms: persistent reduction of autophagosome synthesis and impairment of lysosomal integrity*; J. Biol. Chem., **289** 33568
5) Gundelach *et al*. (2013), *The anticancer drug Dp344mT inhibits T-cell activation and CD25 through a copper-dependent mechanism*; FASEB J., **27** 782
6) Park *et al*. (2020), *Thiosemicarbazones suppress expression of the c-Met oncogene by mechanisms involving lysosomal degradation and intracellular shedding*; J. Biol.Chem., **295** 481

PHYSICAL DATA

Molecular Weight:	285.37
Molecular Formula:	$C_{14}H_{15}N_5S$
Purity:	>98% by TLC
	NMR: (Conforms)
Solubility:	DMSO (>25 mg/mL)
Physical Description:	Orange solid
Storage and Stability:	Store as supplied desiccated at -20°C for up to 1 year from the date of purchase.

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