Data Sheet (Cat.No.T5364)

TargetMol

TBHQ

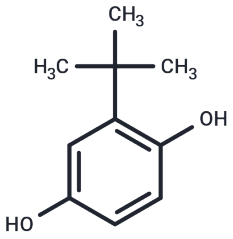
Chemical Properties

CAS No. : 1948-33-0

Formula: C10H14O2

Molecular Weight: 166.22

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.



Biological Description

Description	TBHQ (tert-Butylhydroquinone) is an antioxidant that induces an antioxidant response through the redox-sensitive transcription factor Nrf2.
Targets(IC50)	Apoptosis,ERK,Ferroptosis,Nrf2,Autophagy
In vitro	HeLa cells treated with tBHQ showed preferential oxidation of mitochondrial thioredoxin-2 (Trx2), while cellular glutathione and cytosolic thioredoxin-1 were not affected. With tBHQ treatments, Trx2 overexpression suppressed Nrf2 accumulation and activity [1]. Pretreatment of Jurkat T cells with tBHQ, prior to activation with anti-CD3/anti-CD28, diminished the production of interleukin-2 (IL-2) at both the transcript and protein levels. Similarly, the expression of CD25 also diminished, albeit to a lesser degree than IL-2, after pretreatment with tBHQ [2].
In vivo	TBHQ treatment prevented left ventricular dilatation and cardiac dysfunction induced by TAC and decreased the prevalence of myocardial apoptosis. TBHQ-induced Akt activation was accompanied by increased phosphorylation of Bad, glycogen synthase kinase-3β (GSK-3β) and mammalian target of rapamycin (mTOR). Blockade of the Akt pathway in vivo accelerated cardiac dysfunction, and abrogated the protective effects of TBHQ. TBHQ also reduced the reactive aldehyde production and protein carbonylation in stressed myocardium [3].
Cell Research	Jurkat T cells were cultured in 96-well plates (1×10^5 cells/well) and treated as described, and cell supernatants were harvested 24h after activation with anti-CD3/anti-CD28. IL-2 was quantified from cell supernatants by the use of a commercially available kit per the manufacturer's protocol. Relative light intensity was quantified at 450nm by Bio-Tek μQuant microplate reader. The IL-2 concentrations of each sample were then calculated using a line ar standard curve on Microsoft Excel [2].
Animal Research	TBHQ powder was directly mixed with the animal food powder at a ratio of 1% (w/w) as described previously. The efficacy of this protocol for TBHQ treatment in vivo has also been validated by other groups. TBHQ treatment was continued for 4 weeks after the TAC surgery [3].

Solubility Information

Solubility	DMSO: 245 mg/mL (1473.95 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 5 mg/mL (30.08 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	6.0161 mL	30.0806 mL	60.1612 mL
5 mM	1.2032 mL	6.0161 mL	12.0322 mL
10 mM	0.6016 mL	3.0081 mL	6.0161 mL
50 mM	0.1203 mL	0.6016 mL	1.2032 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Imhoff BR, et al. Tert-butylhydroquinone induces mitochondrial oxidative stress causing Nrf2 activation. Cell Biol Toxicol. 2010 Dec;26(6):541-51.

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