

Product data sheet



MedKoo Cat#: 564717 Name: dtBHQ CAS: 88-58-4 Chemical Formula: C ₁₄ H ₂₂ O ₂ Exact Mass: 222.162 Molecular Weight: 222.328		
Product supplied as:		Powder
Purity (by HPLC):		≥ 98%
Shipping conditions		Ambient temperature
Storage conditions:		Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

dtBHQ is a non-aryllating oxidizable phenol as the source of reactive oxygen species (ROS).

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	55.0	247.38
Ethanol	40.0	179.91

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.50 mL	22.49 mL	44.98 mL
5 mM	0.90 mL	4.50 mL	9.00 mL
10 mM	0.45 mL	2.25 mL	4.50 mL
50 mM	0.09 mL	0.45 mL	0.90 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Kutil Z, Kvasnicova M, Temml V, Schuster D, Vanek T, Fernandez E, Malik J, Landa P. The influence of the quinone antioxidants tert-butylhydroquinone and 2,5-di-tert-butylhydroquinone on the arachidonic acid metabolism in vitro. Food and Agricultural Immunology. 2014 Jun 16;504-511. doi: 10.1080/09540105.2014.988126.
2. Bauman BM, Jeong C, Savage M, Briker AL, Janigian NG, Nguyen LL, Kemmerer ZA, Egger AL. Dr. Jekyll and Mr. Hyde: Oxidizable phenol-generated reactive oxygen species enhance sulforaphane's antioxidant response element activation, even as they suppress Nrf2 protein accumulation. Free Radic Biol Med. 2018 Aug 20;124:532-540. doi: 10.1016/j.freeradbiomed.2018.06.039. Epub 2018 Jun 30. PMID: 29969714.

In vivo study

1. Imazawa T, Mitsumori K, Kitajima S, Onodera H, Tamura T, Takahashi M, Hirose M. Time course of ultrastructural changes and immunoelectron microscopic localization of neurocalcin in motor endplates of the lumbrical muscles of rats given a single administration of 2,5-di(tert-butyl)-1,4-hydroquinone. Acta Neuropathol. 2000 Feb;99(2):109-16. doi: 10.1007/pl00007413. PMID: 10672316.
2. Mitsumori K, Imazawa T, Onodera H, Takahashi M, Kitajima S, Inoue T, Kurokawa Y. Ultrastructural changes in motor endplates of the lumbrical muscles of rats induced by a microsomal Ca²⁺ ATPase inhibitor, 2,5-di(tert-butyl)-1,4-hydroquinone. Arch Toxicol. 1998;72(2):115-8. doi: 10.1007/s002040050477. PMID: 9456084.

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7. Bioactivity

Biological target:

2,5-Di-tert-butylhydroquinone (DTBHQ), the indirect food additive, regulates the activity of 5-lipoxygenase as well as the activity of COX-2 (IC₅₀=1.8 and 14.1 μM for 5-LO and COX-2, respectively) .

In vitro activity

Similarly no activity against COX-1 and -2 was observed for its metabolite TBQ at a concentration of 50 μM. In contrast, DTBHQ inhibited COX-2 with an IC₅₀ of 14.1 μM.

Reference: Food and Agricultural Immunology. 2014 Jun 16;504-511. <https://pubmed.ncbi.nlm.nih.gov/10672316/>

In vivo activity

Synaptic vesicle membranes in the DTBHQ group were weakly labeled at 1 week, but strongly at 6 weeks. The results strongly suggest that DTBHQ targets the motor endplates in the rat lumbrical muscles, causing depletion of neurocalcin in the synaptic vesicles followed by their loss.

Reference: Acta Neuropathol. 2000 Feb;99(2):109-16. <https://pubmed.ncbi.nlm.nih.gov/10672316/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.