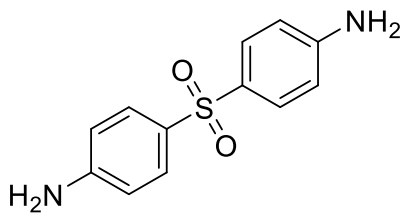
Product data sheet

MedKoo Cat#: 317582 Name: Dapsone CAS#: 80-08-0 Chemical Formula: $C_{12}H_{12}N_2O_2S$ Exact Mass: 248.06195 Molecular Weight: 248.30	
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:

Dapsone is a synthetic derivative of diamino-sulfone with anti-inflammatory and anti-bacterial properties, commonly used for the treatment of leprosy. It is a second-line medication for the treatment and prevention of Pneumocystis pneumonia and for the prevention of toxoplasmosis in those who have poor immune function. Additionally, it has been used for acne as well as other skin conditions. Dapsone is available both topically and by mouth. As a structural analog of p-aminobenzoic acid (PABA), dapsone inhibits dihydropteroate synthase (DHPS), an enzyme important in folate synthesis, resulting in a depletion of the folate pool and a reduction in the amount of thymidylate available for DNA synthesis.

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	75.0	302.05
Ethanol	10.0	40.27

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.03 mL	20.14 mL	40.27 mL
5 mM	0.81 mL	4.03 mL	8.05 mL
10 mM	0.40 mL	2.01 mL	4.03 mL
50 mM	0.08 mL	0.40 mL	0.81 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. Kwon MJ, Joo HG. Dapsone modulates lipopolysaccharide-activated bone marrow cells by inducing cell death and down-regulating tumor necrosis factor-α production. J Vet Sci. 2018 Nov 30;19(6):744-749. doi: 10.4142/jvs.2018.19.6.744. PMID: 30304888; PMCID: PMC6265590.

2. Zhan R, Zhao M, Zhou T, Chen Y, Yu W, Zhao L, Zhang T, Wang H, Yang H, Jin Y, He Q, Yang X, Guo X, Willard B, Pan B, Huang Y, Chen Y, Chui D, Zheng L. Dapsone protects brain microvascular integrity from high-fat diet induced LDL oxidation. Cell Death Dis. 2018 Jun 7;9(6):683. doi: 10.1038/s41419-018-0739-y. PMID: 29880899; PMCID: PMC5992187.

In vivo study

1. Zhan R, Zhao M, Zhou T, Chen Y, Yu W, Zhao L, Zhang T, Wang H, Yang H, Jin Y, He Q, Yang X, Guo X, Willard B, Pan B, Huang Y, Chen Y, Chui D, Zheng L. Dapsone protects brain microvascular integrity from high-fat diet induced LDL oxidation. Cell Death Dis. 2018 Jun 7;9(6):683. doi: 10.1038/s41419-018-0739-y. PMID: 29880899; PMCID: PMC5992187.

Product data sheet

7. Bioactivity

Biological target:

Dapsone (4,4′-Diaminodiphenyl sulfone) is an orally active and blood-brain penetrant sulfonamide antibiotic with bacteriostatic, antimycobacterial and antiprotozoal activities that also exerts effective antileprosy activity and inhibits folate synthesis in cell extracts of M. leprae.

In vitro activity

The present study investigated the anti-inflammatory effects of dapsone on bone marrow cells (BMs), especially upon exposure to lipopolysaccharide (LPS). BMs were treated with LPS and dapsone, and the treated cells underwent cellular activity assay, flow cytometry analysis, cytokine production assessment, and reactive oxygen species assay. Interestingly, dapsone modulated the inflammatory cells, including granulocytes in LPS-treated BMs, by inducing cell death. While the percentage of Gr-1 positive cells was 57% in control cells, LPS increased that to 75%, and LPS plus dapsone decreased it to 64%. Furthermore, dapsone decreased the mitochondrial membrane potential of LPS-treated BMs. At a low concentration (25 μg/mL), dapsone significantly decreased the production of TNF-α in LPS-treated BMs by 54%. This study confirmed that dapsone has anti-inflammatory effects on LPS-mediated inflammation via modulation of the number and function of inflammatory cells, providing new and useful information for clinicians and researchers.

Reference: J Vet Sci. 2018 Nov 30;19(6):744-749. https://pubmed.ncbi.nlm.nih.gov/30304888/

In vivo activity

To determine whether DDS has protective effects on brain microvessels, the cortical microvascular permeability for tetramethylrhodamine (TMR)-dextran (40 kDa) was examined with multiphoton microscopy in a live optical study. Intact microvessel networks were shown in control mice. Administration of DDS significantly attenuated HFD-induced microvessel leakage (Fig. 1a), and the relative fluorescence intensity decreased (Fig. 1c, $p = 0.0001$, $n = 6$). There was no significant difference between control and HFD + DDS group ($p = 0.2039$). The amount of Evans blue in brain parenchyma was detected in the following experiment. Consistently, the content of dye into brain from HFD + DDS group was lower than HFD group (Fig. 1d, $F = 9.964$, $R2 = 0.6242$, $p = 0.041$, $n = 5$). These data indicated that DDS protects brain microvascular integrity during HFD in vivo.

Reference: Cell Death Dis. 2018 Jun; 9(6): 683. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5992187/

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.