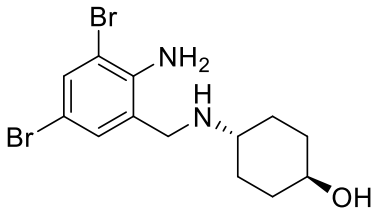
Product data sheet

MedKoo Cat#: 584276 Name: Ambroxol CAS#: 18683-91-5 Chemical Formula: $C_{13}H_{18}Br_2N_2O$ Exact Mass: 375.9786 Molecular Weight: 378.108	
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:
Ambroxol is a metabolite of Bromhexine that stimulates mucociliary action and clears the air passages in the respiratory tract. It is usually administered as the hydrochloride.

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	138.0	356.49

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.64 mL	13.22 mL	26.45 mL
5 mM	0.53 mL	2.64 mL	5.29 mL
10 mM	0.26 mL	1.32 mL	2.64 mL
50 mM	0.05 mL	0.26 mL	0.53 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. Carpinteiro A, Gripp B, Hoffmann M, Pöhlmann S, Hoertel N, Edwards MJ, Kamler M, Kornhuber J, Becker KA, Gulbins E. Inhibition of acid sphingomyelinase by ambroxol prevents SARS-CoV-2 entry into epithelial cells. J Biol Chem. 2021 Jan-Jun;296:100701. doi: 10.1016/j.jbc.2021.100701. Epub 2021 Apr 23. PMID: 33895135; PMCID: PMC8062550.
2. Kopytova AE, Rychkov GN, Nikolaev MA, Baydakova GV, Cheblokov AA, Senkevich KA, Bogdanova DA, Bolshakova OI, Miliukhina IV, Bezrukikh VA, Salogub GN, Sarantseva SV, Usenko TC, Zakharova EY, Emelyanov AK, Pchelina SN. Ambroxol increases glucocerebrosidase (GCase) activity and restores GCase translocation in primary patient-derived macrophages in Gaucher disease and Parkinsonism. Parkinsonism Relat Disord. 2021 Mar;84:112-121. doi: 10.1016/j.parkreldis.2021.02.003. Epub 2021 Feb 10. PMID: 33609962.

In vivo study

1. Kókai D, Paróczai D, Virok DP, Endrész V, Gáspár R, Csont T, Bozó R, Burián K. Ambroxol Treatment Suppresses the Proliferation of Chlamydia pneumoniae in Murine Lungs. Microorganisms. 2021 Apr 20;9(4):880. doi: 10.3390/microorganisms9040880. PMID: 33924075; PMCID: PMC8074272.
2. Ge H, Zhang C, Yang Y, Chen W, Zhong J, Fang X, Jiang X, Tan L, Zou Y, Hu R, Chen Y, Feng H. Ambroxol Upregulates Glucocerebrosidase Expression to Promote Neural Stem Cells Differentiation Into Neurons Through Wnt/β-Catenin Pathway After Ischemic Stroke. Front Mol Neurosci. 2021 Jan 20;13:596039. doi: 10.3389/fnmol.2020.596039. PMID: 33551744; PMCID: PMC7855720.

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7. Bioactivity

Biological target:

Ambroxol is a glucocerebrosidase (GCase) chaperone and increases glucocerebrosidase activity.

In vitro activity

Ambroxol induced a dose-dependent reduction of the activity of the acid sphingomyelinase in Vero-E6 cells (Fig. 1A). Ambroxol did not show toxicity until 50 μM concentration, whereas higher concentrations such as 75 μM started to show some toxicity as evidenced by flow cytometry studies of untreated and ambroxol-treated cells stained with FITC–annexin V (Roche; Fig. 1B).

Reference: J Biol Chem. 2021 Jan-Jun; 296: 100701. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8062550/

In vivo activity

A significant difference was found between the number of recoverable C. pneumoniae between the Ax-treated and untreated groups. The mean numbers of viable C. pneumoniae IFUs in the Ax (Ambroxol)-treated and untreated groups were 3.1 × 104 and 7.3 × 104 IFU/lung, respectively (Figure 1). The mice in the Ax-treated group exhibited less severe symptoms than those in the control group.

Reference: Microorganisms. 2021 Apr; 9(4): 880. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8074272/

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.