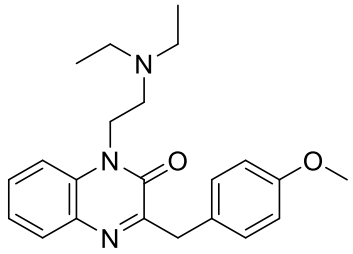
Product data sheet

MedKoo Cat#: 584962 Name: Caroverine CAS#: 23465-76-1 Chemical Formula: $C_{22}H_{27}N_3O_2$ Exact Mass: 365.2103 Molecular Weight: 365.477	
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:
Caroverine is a potential chemotherapeutical agent in HNSCC cell lines.

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	100	248.80

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.74 mL	13.68 mL	27.36 mL
5 mM	0.55 mL	2.74 mL	5.47 mL
10 mM	0.27 mL	1.37 mL	2.74 mL
50 mM	0.05 mL	0.27 mL	0.55 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. Haymerle G, Thurnher D, Kadletz L, Stanisz I, Brunner M, Kotowski U, Enzenhofer E, Heiduschka G. Assessment of caroverine as a potential chemotherapeutical agent in HNSCC cell lines. Eur Arch Otorhinolaryngol. 2015 Nov;272(11):3451-6. doi: 10.1007/s00405-014-3364-0. Epub 2014 Oct 29. PMID: 25351499.

In vivo study

1. Chen Z, Ulfendahl M, Ruan R, Tan L, Duan M. Protection of auditory function against noise trauma with local caroverine administration in guinea pigs. Hear Res. 2004 Nov;197(1-2):131-6. doi: 10.1016/j.heares.2004.03.021. PMID: 15504611.

2. Duan M, Chen Z, Qiu J, Ulfendahl M, Laurell G, Borg E, Ruan R. Low-dose, long-term caroverine administration attenuates impulse noise-induced hearing loss in the rat. Acta Otolaryngol. 2006 Dec;126(11):1140-7. doi: 10.1080/00016480500540519. PMID: 17050305.

7. Bioactivity
Biological target:

Caroverine hydrochloride is a potent, competitive and reversible antagonist of NMDA and AMPA glutamate receptor.

In vitro activity

Product data sheet

The aim of this study was to evaluate the effect of caroverine on HNSCC cell lines. The HNSCC cell lines SCC9, SCC25, CAL27, and FaDu were incubated with caroverine alone or in combination with cisplatin, 5-fluorouracil (5-FU) or cetuximab. Cell viability was measured using the CCK-8 assay. The murine 3T3 fibroblast cell line was used to address tissue specificity. Apoptosis was visualized by immunohistochemistry. Caroverine showed a dose-dependent growth inhibition in all cell lines, IC50 values ranged from 75.69 to 179.80 µM. This effect was increased when caroverine was combined with cetuximab or 5-FU. Immunohistochemistry displayed more apoptosis after caroverine treatment compared to controls. Furthermore, caroverine alone had no growth inhibitory effect on 3T3 cells. For the first time, this study provides evidence that caroverine may serve as a supportive drug in the treatment of HNSCC patients.

Reference: Eur Arch Otorhinolaryngol. 2015 Nov;272(11):3451-6. https://dx.doi.org/10.1007/s00405-014-3364-0

In vivo activity

All three groups showed threshold shifts ranging from 50 to 70 dB across frequencies at 1.5, 3 and 6 h after RWM applications, irrespective of whether it was from control or caroverine treatment group. At 24 h after local application, the control group showed a recovery of around 20 dB at all tested frequencies. For the caroverine groups, however, the recovery was much more pronounced. At 24 h the HD group showed a 40–50 dB threshold recovery at 20, 16, 12.5 and 4 kHz, and about 30 dB recovery at 8 kHz. And the threshold recovery was significantly larger than that for the control group at all five frequencies ($p < 0.05$). In the LD group, the recovery was smaller but was still significant compared to the control group at 24 h at the two highest frequencies (a 20–35 dB recovery at 20 and 16 kHz; $p = 0.0004$, and $p = 0.007$, respectively).

Reference: Hear Res. 2004 Nov;197(1-2):131-6. https://linkinghub.elsevier.com/retrieve/pii/S0378-5955(04)00208-4