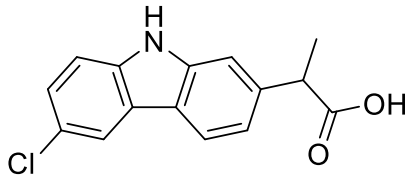
Product data sheet

MedKoo Cat#: 317375 Name: Carprofen CAS#: 53716-49-7 Chemical Formula: $C_{15}H_{12}ClNO_2$ Exact Mass: 273.05566 Molecular Weight: 273.71	
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:
Carprofen is a non-steroidal anti-inflammatory drug that veterinarians prescribe as a supportive treatment for various conditions. It provides day-to-day treatment for pain and inflammation from arthritis in geriatric dogs, joint pain, osteoarthritis, hip dysplasia, and other forms of joint deterioration. It is also used to relieve short-term post-operative pain, inflammation, and swelling after spaying, neutering, and other procedures. Carprofen reduces inflammation by inhibition of COX-2 and other sources of inflammatory prostaglandins. This is targeted protection, in that it does not interfere with COX-1 activity.

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	200.94
Ethanol	55	200.94

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	3.65 mL	18.27 mL	36.54 mL
5 mM	0.73 mL	3.65 mL	7.31 mL
10 mM	0.37 mL	1.83 mL	3.65 mL
50 mM	0.07 mL	0.37 mL	0.73 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. Waldherr K, Zurbriggen A, Spreng DE, Forterre S. In vitro cytoprotective effects of acetylsalicylic acid, carprofen, meloxicam, or robenacoxib against apoptosis induced by sodium nitroprusside in canine cruciate ligament cells. Am J Vet Res. 2012 Nov;73(11):1752-8. doi: 10.2460/ajvr.73.11.1752. PMID: 23106460.

In vivo study

1. Thau-Zuchman O, Shohami E, Alexandrovich AG, Trembovler V, Leker RR. The anti-inflammatory drug carprofen improves long-term outcome and induces gliogenesis after traumatic brain injury. J Neurotrauma. 2012 Jan 20;29(2):375-84. doi: 10.1089/neu.2010.1673. Epub 2011 Aug 29. PMID: 21561314.

7. Bioactivity
Biological target:

Carprofen is a nonsteroid anti-inflammatory agent, acts as a multi-target FAAH/COX inhibitor, with IC50s of 3.9 μM, 22.3 μM and 78.6 μM for COX-2, COX-1 and FAAH, respectively.

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In vitro activity

Cytoprotective effects of NSAIDs were dependent on the extent of SNP-induced apoptosis and were greatest in CCL and CaCL cell cultures with moderate SNP-induced cytotoxic effects. Preincubation with an NSAID improved cell viability by 15% to 45% when CCL and CaCL cells were subsequently incubated with SNP. Carprofen (10 µg/mL) had the greatest cytoprotective effects for CCL and CaCL cells. Incubation with NSAIDs resulted in a nonsignificant decrease in PGE(2) production from SNP-damaged cells.

Reference: Am J Vet Res. 2012 Nov;73(11):1752-8. https://avmajournals.avma.org/doi/10.2460/ajvr.73.11.1752?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed

In vivo activity

Traumatic brain injury (TBI) initiates acute and chronic inflammatory processes involving cyclooxygenase-2 (COX-2), which may have detrimental effects on outcome and especially on brain regeneration. Therefore carprofen, a COX-2 inhibitor, was studied for whether it would improve outcome and increase neurogenesis after TBI. TBI was induced in Sabra mice that were then treated with vehicle or carprofen for 7 days. Functional outcome was evaluated with the Neurological Severity Score (NSS).Cytokine levels were assessed 4 h post-TBI and water content was measured 24 h post TBI. Mice were given BrdU to label newborn cells for 10 days. The animals were killed 90 days post-TBI and the lesion size as well as newborn cell fate were assessed. Carprofen significantly reduced lesion size ($p=0.002$), decreased water content in the lesioned cortex ($p=0.03$), reduced the number of microglia in the lesioned cortex ($p<0.0001$), and lowered the levels of proinflammatory cytokines (IL-1β, $p=0.03$; IL-6, $p=0.02$). Carprofen led to significantly larger improvements in functional outcome ($p \leqslant 0.008$) which were durable over 90 days. Carprofen also induced a threefold increase in the proliferation of new cells in the peri-lesion area ($p \leqslant 0.002$), but newborn cells differentiated mainly into glia in both groups. Carprofen is neuroprotective and induces cell proliferation and gliogenesis after TBI. Treatment with carprofen is consistently associated with better functional outcome. Our results imply that anti-inflammatory drugs may represent novel therapeutic options for TBI.

Reference: J Neurotrauma. 2012 Jan 20;29(2):375-84. https://www.liebertpub.com/doi/10.1089/neu.2010.1673?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed