Meloxicam

Cat. No.: HY-B0261

CAS No.: 71125-38-7

Molecular Formula: $C_{14}H_{13}N_3O_4S_2$

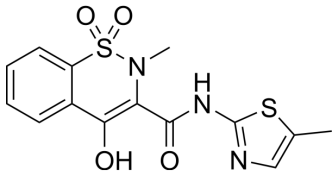
Molecular Weight: 351.4

Target: COX; Autophagy; Apoptosis; MMP

Pathway: Immunology/Inflammation; Autophagy; Apoptosis; Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 10 mg/mL (28.46 mM; Need ultrasonic)

H_2O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.8458 mL	14.2288 mL	28.4576 mL
5 mM	0.5692 mL	2.8458 mL	5.6915 mL
10 mM	0.2846 mL	1.4229 mL	2.8458 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.11 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 1 mg/mL (2.85 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Meloxicam is a non-steroidal antiinflammatory agent, inhibits COX activity, with IC_{50}s of 0.49 μM and 36.6 μM for COX-2 and COX-1, respectively.

IC_{50} & Target

COX-2	COX-1	MMP-2
0.49 μM (IC_{50})	36.6 μM (IC_{50})	

In Vitro

Meloxicam (Compound 5) is a non-steroidal antiinflammatory agent, inhibits COX activity, with IC_{50}s of 0.49 μM and 36.6 μM for COX-2 and COX-1, respectively[1]. Meloxicam inhibits COX^+ tumor cells, but shows no cytotoxicity on CF41.Mg or MDCK cells at 0.25-25 μg/mL. Furthermore, Meloxicam in combination with doxorubicin, has no synergistic effect on CF41.Mg cells.

	Meloxicam (0.25 μg/mL) decreases CF41.Mg cell migration and invasion, induces decrease in MMP-2 expression, and increases β-catenin phophorylation in CF41.Mg cells, but does not affect the CF41.Mg cell apoptosis[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Meloxicam (10 mg/kg) alone or in combination with rutin significantly decreases paw liking time on 1st day by 55% and 49% compared with the formalin-treated group, respectively, however the combination reduces time non-significantly on 3rd day in mice. Meloxicam alone or in combination with rutin also decreases relative liver weights, reduces MDA contents, induces liver SOD activities, hampers IL-1β content, and significantly reduces the number of positive caspase-3 immunoreactive cells in mice[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [2]	CF41.Mg and MDCK cells are seeded at a density of 1.5×10^3 cells/well into 96-well plates, cultured for 24 h and then exposed to 0-25 μg/mL Meloxicam alone or in combination with doxorubicin. To evaluate synergism and sensitization, doxorubicin is added at the same time and after 24 h, respectively. MDCK cells are exposed only to Meloxicam as a non-tumor negative control. Control groups are cultured without Meloxicam and doxorubicin, but the corresponding amount of DMSO is added to the medium. Following an incubation period of 24 and 48 h, cell growth is measured using the MTS assay, with the absorbance at 490 nm determined using a microplate reader. Each experiment is performed 3 times in triplicate[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3]	Mice[3] Thirty-two mice are randomLy allocated into four groups, eight mice each. Groups are received 20 μL of 2.5% formalin injected in the plantar region of the right hind paw of mice on the 1st and 3rd days 1 h after administration of 1% DMSO (group 1; positive control group), 60 mg/kg rutin, orally (group 2), and oral treatment with 10 mg/kg Meloxicam (group 3), as well as combined treatment of rutin and Meloxicam (group 4). In all groups, drugs are administered once a day for duration of 7 days. On day 7, mice are euthanized and right hind paws plus livers are immediately excised, washed with ice-cold saline, blotted dry, and weighed. They are stored at −80°C till the time of analysis. Then the used animals will be frozen till being incinerated[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Chem-Biol Interact. 2021, 109425.
- Biotechnol Bioeng. 2021 Sep 3.
- JOR Spine. 2023 Oct 18.
- Naunyn Schmiedebergs Arch Pharmacol. 2023 Nov 8.

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REFERENCES

[1]. Lazer ES, et al. Effect of structural modification of enol-carboxamide-type nonsteroidal antiinflammatory drugs on COX-2/COX-1 selectivity. J Med Chem. 1997 Mar 14;40(6):980-9.

[2]. Iturriaga MP, et al. Meloxicam decreases the migration and invasion of CF41.Mg canine mammary carcinoma cells. Oncol Lett. 2017 Aug;14(2):2198-2206.

[3]. Fikry EM, et al. Rutin and meloxicam attenuate paw inflammation in mice: Affecting sorbitol dehydrogenase activity. J Biochem Mol Toxicol. 2018 Feb;32(2).

Caution: Product has not been fully validated for medical applications. For research use only.

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