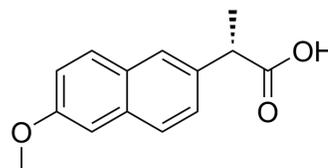


## Naproxen

Cat. No.:	HY-15030		
CAS No.:	22204-53-1		
Molecular Formula:	C <sub>14</sub> H <sub>14</sub> O <sub>3</sub>		
Molecular Weight:	230		
Target:	COX; Autophagy		
Pathway:	Immunology/Inflammation; Autophagy		
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 : ≥ 100 mg/mL (434.78 mM)  
 H<sub>2</sub>O : 75 mg/mL (326.09 mM; Need ultrasonic and warming)  
 \* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	4.3478 mL	21.7391 mL	43.4783 mL
	5 mM	0.8696 mL	4.3478 mL	8.6957 mL
	10 mM	0.4348 mL	2.1739 mL	4.3478 mL

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

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (10.87 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (10.87 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (10.87 mM); Clear solution
- Add each solvent one by one: PBS  
Solubility: 2 mg/mL (8.70 mM); Clear solution; Need ultrasonic

### BIOLOGICAL ACTIVITY

Description	Naproxen is a COX-1 and COX-2 inhibitor with IC <sub>50</sub> s of 8.72 and 5.15 μM, respectively in cell assay.	
IC <sub>50</sub> & Target	COX-2	COX-1

	5.65 $\mu$ M (IC <sub>50</sub> )	9.55 $\mu$ M (IC <sub>50</sub> )
<b>In Vitro</b>	<p>Naproxen etemesil is a lipophilic, non-acidic, inactive prodrug of naproxen that is hydrolysed to pharmacologically active Naproxen once absorbed. Naproxen is a well known nonsteroidal anti-inflammatory drug. Naproxen is approximately equipotent inhibitor of COX-1 and COX-2 in intact cells with IC<sub>50</sub>s of 2.2 <math>\mu</math>g/mL and 1.3 <math>\mu</math>g/mL, respectively<sup>[1]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>	
<b>In Vivo</b>	<p>Naproxen exerts an anti-inflammatory and antifibrotic effect in mouse model of bleomycin-induced lung fibrosis. Naproxen also downregulates TGF-<math>\beta</math> levels and Smad3/4 complex formation<sup>[2]</sup>. Naproxen is shown to inhibit the time-courses of pain, fever and PGE2 with similar potencies (IC<sub>50</sub>=27, 40, 13 <math>\mu</math>M)<sup>[3]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>	

## PROTOCOL

<b>Cell Assay</b> <sup>[1]</sup>	<p>BAEC are incubated for 30 min with Naproxen (0.1 ng/mL to 1 mg/mL). Arachidonic acid (30 <math>\mu</math>M) is then added, and the cells are incubated for a further 15 min at 37°C. The medium is then removed, and radioimmunoassay is used to measure the formation of 6-keto-PGF<sub>1<math>\alpha</math></sub>, PGE<sub>2</sub>, thromboxane B<sub>2</sub>, or PGF<sub>2<math>\alpha</math></sub><sup>[1]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>Animal Administration</b> <sup>[2][3]</sup>	<p><b>Rats</b><sup>[3]</sup></p> <p>To measure the analgesic effects of naproxen in a carrageenan-induced model of monoarthritis, Male Sprague–Dawley rats (n=48, 217±28 g) are randomly divided into four groups of 12 by an internally developed computer program, allowing the blind performance of the behavioral experiment. To induce hyperalgesia by inflammation, animals in groups 1B, 1C, and 1D receive a 40-<math>\mu</math>L intra-articular injection of a saline solution containing 7.5 mg/mL carrageenan in the left hind limb under isoflurane anesthesia (time=-1 h). Animals in group 1A receive no injection. After 1 h (time=0) the animals in groups 1A, 1B, 1C, and 1D receive oral doses of naproxen in saline of 0, 0, 7.5 and 30 <math>\mu</math>mol/kg, respectively. The doses and time points of measurements are selected on the basis of simulations predicting measuring a full concentration-effect relationship within the time-span of the experiment<sup>[3]</sup>.</p> <p><b>Mice</b><sup>[2]</sup></p> <p>Bleomycin (0.05 IU) is instilled intratracheally to C57BL/6 mice, which are then treated by micro-osmotic pump with vehicle, JNJ7777120 (40 mg/kg b.wt.), naproxen (21 mg/kg b.wt.), or a combination of both. Airway resistance to inflation, an index of lung stiffness, is assessed, and lung specimens are processed for inflammation, oxidative stress, and fibrosis markers<sup>[2]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## CUSTOMER VALIDATION

- Chemosphere. 2019 Jun;225:378-387.
- Biotechnol Bioeng. 2021 Sep 3.

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## REFERENCES

[1]. Mitchell JA, et al. Selectivity of nonsteroidal antiinflammatory drugs as inhibitors of constitutive and inducible cyclooxygenase. Proc Natl Acad Sci U S A. 1993 Dec 15;90(24):11693-7.

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[2]. Rosa AC, et al. Prevention of bleomycin-induced lung inflammation and fibrosis in mice by naproxen and JNJ777120 treatment. J Pharmacol Exp Ther. 2014 Nov;351(2):308-16.

[3]. Krekels EH, et al. Pharmacokinetic-pharmacodynamic modeling of the inhibitory effects of naproxen on the time-courses of inflammatory pain, fever, and the ex vivo synthesis of TXB2 and PGE2 in rats.

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

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