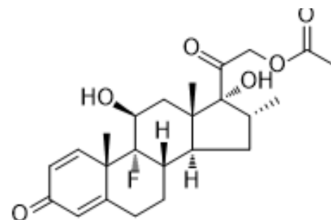


## Dexamethasone acetate

<b>Cat. No.:</b>	HY-14648A
<b>CAS No.:</b>	1177-87-3
<b>Molecular Formula:</b>	C <sub>24</sub> H <sub>31</sub> FO <sub>6</sub>
<b>Molecular Weight:</b>	434.5
<b>Target:</b>	Glucocorticoid Receptor; Autophagy; Mitophagy; Bacterial; SARS-CoV; Antibiotic; Complement System; ADC Cytotoxin
<b>Pathway:</b>	Immunology/Inflammation; Vitamin D Related/Nuclear Receptor; Autophagy; Anti-infection; Antibody-drug Conjugate/ADC Related
<b>Storage:</b>	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 50 mg/mL (115.07 mM; Need ultrasonic)				
		Solvent Concentration	Mass 1 mg	5 mg	10 mg
	<b>Preparing Stock Solutions</b>	1 mM	2.3015 mL	11.5075 mL	23.0150 mL
		5 mM	0.4603 mL	2.3015 mL	4.6030 mL
10 mM		0.2301 mL	1.1507 mL	2.3015 mL	
Please refer to the solubility information to select the appropriate solvent.					
<b>In Vivo</b>	<ol style="list-style-type: none"> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 40% PEG300 &gt;&gt; 5% Tween-80 &gt;&gt; 45% saline Solubility: ≥ 2.08 mg/mL (4.79 mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.08 mg/mL (4.79 mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% corn oil Solubility: ≥ 2.08 mg/mL (4.79 mM); Clear solution</li> </ol>				

### BIOLOGICAL ACTIVITY

<b>Description</b>	Dexamethasone acetate (Dexamethasone 21-acetate) is a glucocorticoid receptor agonist. Dexamethasone also significantly decreases CD11b, CD18, and CD62L expression on neutrophils, and CD11b and CD18 expression on monocytes. Dexamethasone is highly effective in the control of COVID-19 infection. Dexamethasone inhibits production of exosomes containing inflammatory microRNA-155 in lipopolysaccharide-induced macrophage inflammatory responses.
<b>IC<sub>50</sub> &amp; Target</b>	Glucocorticoid receptor <sup>[1]</sup>

<b>In Vitro</b>	<p>protein-1, nuclear factor-AT, and nuclear factor-kB, leading to the activation and repression of key genes involved in the inflammatory response<sup>[1]</sup>.</p> <p>Dexamethasone potently inhibits granulocyte-macrophage colony stimulating factor (GM-CSF) release from A549 cells with EC<sub>50</sub> of 2.2 nM. Dexamethasone (EC<sub>50</sub>=36 nM) induces transcription of the β<sub>2</sub>-receptor is found to correlate with glucocorticoid receptor (GR) DNA binding and occurred at 10-100 fold higher concentrations than the inhibition of GM-CSF release. Dexamethasone (IC<sub>50</sub>=0.5 nM) inhibits a 3×κB (NF-κB, IκBα, and I-κBβ), which is associated with inhibition of GM-CSF release<sup>[2]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>In Vivo</b>	<p>A single dose of Dexamethasone 10 mg/kg (i.p.) significantly decreases recruitment of granulocytes as well as spontaneous production of oxygen radicals compared with animals expose to LPS and injected with solvent alone (saline)<sup>[3]</sup>. Rats treated with Dexamethasone consume less food and weighed less than control rats. Treated rats also weigh less than pair-fed animals though their food intake is similar. Five days of Dexamethasone injection result in a significant increase in both the liver mass (+42%) and the liver to body weight ratio (+65%). The wet weight of gastrocnemius muscle decreases 20% after 5 days of treatment, but it remains unaffected relative to body weight (g/100 g body weight), indicating that muscle weight loss paralleled body weight loss<sup>[4]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## PROTOCOL

### Animal Administration <sup>[3][4]</sup>

#### Mice<sup>[3]</sup>

Female C57Bl/6JBom mice (age 10-12 weeks) are used in all experiments. Dexamethasone is administered as a single injection of 1 or 10 mg/kg. Dexamethasone is dissolved in saline and 400 μL are injected intraperitoneally, either 1 h before or 1 h after LPS exposure. In one experiment, N-acetylcysteine (NAC) (100 and 500 mg/kg) is injected successively every 4-5 h, starting 1 h before challenge (five injections in total). A control group of LPS-exposed animals are injected intraperitoneally with solvent alone (saline). Intratracheal administration is performed by instillation of 100 μL NAC (50, 100 or 500 mg/kg) or Dexamethasone (10 mg/kg) into the lungs of mice anaesthetized with 15 mg/kg Rapinovel (i.v.).

#### Rats<sup>[4]</sup>

Male Sprague-Dawley rats are used. Dexamethasone-treated rats are injected intraperitoneally once daily with Dexamethasone (1.5 mg/kg body weight) for 5 days and are allowed to feed ad libitum. The Dexamethasone dose (1.5 mg/kg/day) and the duration of treatment (5 days) are specifically chosen as this treatment induced a reproducible and marked catabolic state. Control rats received no treatment and are fed ad libitum. In order to take into account the decrease in food intake induced by Dexamethasone treatment, a third group of pair-fed rats are used. These rats are provided with the same amount of food as Dexamethasone-injected rats and are treated with a daily isovolumic intraperitoneal injection of NaCl (0.9%) for 5 days. After the final injection of Dexamethasone or NaCl, the animals are fasted overnight prior to being killed by decapitation.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- J Ethnopharmacol. 2021 Mar 1;267:113516.
- Cell Transplant. 2023 Jan-Dec;32:9636897231177356.

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## REFERENCES

[1]. Heidi Ledford. et al. Coronavirus Breakthrough: Dexamethasone Is First Drug Shown to Save Lives. Nature. 2020 Jun 16.

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- [2]. Yun Chen, et al. Glucocorticoids inhibit production of exosomes containing inflammatory microRNA-155 in lipopolysaccharide-induced macrophage inflammatory responses. *Int J Clin Exp Pathol* 2018;11(7):3391-3397.
- [3]. LaLone CA, et al. Effects of a glucocorticoid receptor agonist, Dexamethasone, on fathead minnow reproduction, growth, and development. *Environ Toxicol Chem.* 2012 Mar;31(3):611-22.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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