# Dexamethasone (DHAP)

OrganRegen, INC.
*Creating Solutions for Organoid Cultures*

Catalog Number: S1322

## DESCRIPTION

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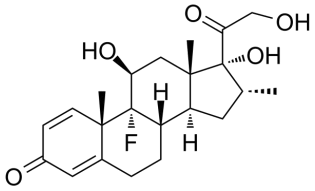
| Background | Dexamethasone is a glucocorticoid receptor agonist. Dexamethasone also significantly decreases CD11b, CD18, and CD62L expression on neutrophils, and CD11b and CD18 expression on monocytes. Dexamethasone is highly effective in the control of COVID-19 infection. Dexamethasone inhibits production of exosomes containing inflammatory microRNA-155 in lipopolysaccharide-induced macrophage inflammatory responses. | | |
| Alias | Synonyms,地塞米松,Hexadecadrol,Prednisolone F | | |
| M. W t | 392.46 | | |
| Formula | $C_{22}H_{29}FO_5$ | | |
| CAS No | 50-02-2 | | |
| Storage | Powder | -20°C | 3 years |
| | In solvent | -80°C | 2 years |
| Solubility | DMSO | 250 mg/mL(637.01 mM; ultrasonic and warming and heat to 60°C) | |
| | Ethanol | 8.33 mg/mL(21.23 mM; Need ultrasonic) | |
| | H2O | < 0.1 mg/mL(insoluble) | |




$C_{22}H_{29}FO_5$

## BIOLOGICAL ALTIVITY

**In Vitro**

Dexamethasone regulates several transcription factors, including activator protein-1, nuclear factor-AT, and nuclear factor-kB, leading to the activation and repression of key genes involved in the inflammatory response[1].

Dexamethasone potently inhibits granulocyte-macrophage colony stimulating factor (GM-CSF) release from A549 cells with EC50 of 2.2 nM. Dexamethasone (EC50=36 nM) induces transcription of the β2-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 (IC50=0.5 nM) inhibits a 3×κB (NF-κB, IκBα, and I-κBβ), which is associated with inhibition of GM-CSF release[2].

**In Vivo**

It has previously been reported that treatment with Dexamethasone at a dose of 2×5 mg/kg efficiently inhibits lipopolysaccharide (LPS)-induced inflammation. In our experimental system, treatment with 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). The effects are statistically significant when administered both 1 h before and 1 h after inhalation of LPS. The number of granulocytes in BALF decreased to levels comparable to healthy animals (given an aerosol of water)[3].

## REFERENCES


[1]. 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.

[2]. Adcock IM, et al. Ligand-induced differentiation of glucocorticoid receptor (GR) trans-repression and transactivation: preferential targetting of NF-kappaB and lack of I-kappaB involvement. Br J Pharmacol. 1999 Jun;127(4):1003-11

[3]. Rocksén D, et al. Differential anti-inflammatory and anti-oxidative effects of Dexamethasone and N-acetylcysteine in endotoxin-induced lung inflammation. Clin Exp Immunol. 2000 Nov;122(2):249-56