

Product Data Sheet

Product Name: Dexamethasone palmitate

Cat. No.: GC38573

Chemical Properties

Cas. No. 14899-36-6

SMILES C[C@@]12[C@](C[C@@H](C)[C@]2(O)C(COC(CCCCCCCCCCCCCCCC)=O)=O)([H])[C@@]3([H])[C@@](F)([C@@]4(C(CC3)=CC(C=C4)=O)C)[C@@H](O)C1

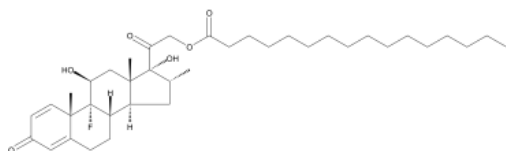
Formula $C_{38}H_{59}FO_6$ M.Wt 630.87

Solubility DMSO: 250 mg/mL (396.28 mM) Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

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Cell lines	RAW 264.7 cells (mouse macrophage cell line)
Preparation Method	RAW 264.7 cells were seeded in 24-well plates at 4×10^4 cells/well and incubated 48h until 80% confluency. Cells were stimulated with 0.1 μ g/mL LPS for 3h, then treated with Dexamethasone palmitate nanoparticles at 100 μ g/mL (equivalent to 82 μ g/mL free dexamethasone phosphate) for 24h. Supernatants were collected and TNF- α and MCP-1 levels were quantified by cytometric beads array.
Reaction Conditions	100 μ g/mL; 24h
Applications	Dexamethasone palmitate nanoparticles reduced TNF- α secretion and MCP-1 secretion in LPS-activated RAW 264.7 macrophages.

Animal experiment [2]:

Animal models	Lethally irradiated C57BL/6J mice (recipient) with BALB/c donor TCD-BM (5×10^6) and T lymphocytes (1×10^7) co-transplanted via tail vein
Preparation Method	Mice were intravenously administered 10mg/kg Dexamethasone palmitate on day 7 and day 14 after transplantation. Mice were monitored daily for clinical GVHD score (3 times/week until day 42), survival, and were sacrificed for histopathologic analysis of skin and gut, F4/80 immunohistochemistry, and FACS analysis of dermal macrophage chimerism.
Dosage form	10mg/kg; i.v.; twice does (day 7 and day 14)

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Applications	Dexamethasone palmitate decreased clinical GVHD score, reduced skin and gut pathological GVHD scores, lowered F4/80 ⁺ macrophage number in skin and gut, reduced mRNA levels of TNF- α and IFN- γ and increased IL-10 in skin macrophages, and rescued about 20% of mice from GVHD-related death.
References: [1] Lorscheider M, Tsapis N, ur-Rehman M, et al. Dexamethasone palmitate nanoparticles: An efficient treatment for rheumatoid arthritis. J Control Release. 2019 Apr 10;296:179-189. [2] Nishiwaki S, Nakayama T, Murata M, et al. Dexamethasone Palmitate Ameliorates Macrophages-Rich Graft-versus-Host Disease by Inhibiting Macrophage Functions. PLoS ONE. 2014 May 7;9(5):e96252.	

Background

Dexamethasone palmitate is a highly lipophilic glucocorticoid prodrug. Dexamethasone palmitate exhibits 47-fold lower affinity for the glucocorticoid receptor compared to Dexamethasone. Dexamethasone palmitate can be hydrolyzed by esterases in inflamed tissues to the active metabolite dexamethasone, exerting anti-inflammatory and immunosuppressive effects. Dexamethasone palmitate can inhibit macrophage chemotaxis, phagocytosis, and reactive oxygen species release. Dexamethasone palmitate can be used in related research on rheumatoid arthritis, graft-versus-host disease, macular edema, and sudden sensorineural hearing loss^[1-4].

In vitro, treatment of macrophages activated with 100ng/mL LPS and 20ng/mL IFN- γ with 25 μ M Dexamethasone palmitate for 6-24 hours promoted rapid cell detachment from culture plates and reduced macrophage viability^[5]. Treatment of RAW264.7 cells activated with 0.1 μ g/mL LPS with 100 μ g/mL Dexamethasone palmitate nanoparticles for 24 hours reduced TNF- α and MCP-1 secretion levels^[6].

In vivo, intravitreal injection of 4 μ g Dexamethasone palmitate (0.5 μ L) immediately after laser-induced choroidal neovascularization in the right eye of Brown Norway rats. Dexamethasone palmitate reduced fluorescein leakage scores and decreased choroidal neovascularization volume^[7].

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Intravenous injection of 10mg/kg Dexamethasone palmitate on day 7 and day 14 after transplantation in C57BL/6J mice with lethal graft-versus-host disease (GVHD). Dexamethasone palmitate reduced clinical GVHD scores, decreased skin and intestinal tissue damage and F4/80⁺ macrophage numbers, and increased survival rate^[8]. Inhalation of solid lipid nanoparticles containing Dexamethasone palmitate (5, 10, or 15mg/kg) via mesh nebulizer for 20 minutes in C57BL/6JNarl mice with intratracheal LPS-induced lung inflammation. Dexamethasone palmitate reduced TNF- α and IL-6 levels in bronchoalveolar lavage fluid, alleviated alveolar immune cell infiltration in lung tissue, and maintained alveolar and bronchiolar structural integrity^[9].

References:

- [1] Ahn JH. Dexamethasone palmitate: A promising intratympanic treatment option for severe sudden hearing loss. *Am J Otolaryngol*. 2026 Jan-Feb;47(1):104766.
- [2] Wang B, Huang C, Xu L, et.al. Bioequivalence evaluation of dexamethasone palmitate injections by intravenous injection in healthy Chinese volunteers: a 2-period crossover trial. *Naunyn Schmiedebergs Arch Pharmacol*. 2025 Dec;398(12):17735-17743.
- [3] Lei Y, Cao YX, Xu CB, et al. The Raf-1 inhibitor GW5074 and dexamethasone suppress sidestream smoke-induced airway hyperresponsiveness in mice. *Respir Res*. 2008 Nov 3;9:71.
- [4] Ono R, Sakamoto K, Doi T, et al. Dexamethasone palmitate for children with Epstein-Barr virus associated hemophagocytic lymphohistiocytosis. *Int J Hematol*. 2025 Feb;121(2):252-256.
- [5] Nishiwaki S, Nakayama T, Murata M, et al. Dexamethasone palmitate successfully attenuates hemophagocytic syndrome after allogeneic stem cell transplantation: macrophage-targeted steroid therapy. *Int J Hematol*. 2012 Apr;95(4):428-433.
- [6] Lorscheider M, Tsapis N, ur-Rehman M, et al. Dexamethasone palmitate nanoparticles: An efficient treatment for rheumatoid arthritis. *J Control Release*. 2019 Apr 10;296:179-189.
- [7] Daull P, Paterson CA, Kuppermann BD, et al. A preliminary evaluation of dexamethasone palmitate emulsion: a novel intravitreal sustained delivery of corticosteroid for treatment of macular edema. *J Ocul Pharmacol Ther*. 2013;29(2):258-269.
- [8] Nishiwaki S, Nakayama T, Murata M, et al. Dexamethasone Palmitate Ameliorates Macrophages-

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Rich Graft-versus-Host Disease by Inhibiting Macrophage Functions. PLoS ONE. 2014 May 7;9(5):e96252.

[9] Chen H-H, Sang C-H, Chou C-W, et al. Solid Lipid Nanoparticles Loaded with Dexamethasone Palmitate for Pulmonary Inflammation Treatment by Nebulization Approach. Pharmaceutics. 2024 Jun;16(7):878.

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