

Product Data Sheet

Product Name: Cytosporone B

Cat. No.: GC10562

Chemical Properties

Cas. No. 321661-62-5

Chemical Name ethyl 2-(3,5-dihydroxy-2-octanoylphenyl)acetate

SMILES OC1=CC(O)=CC(CC(OCC)=O)=C1C(CCCCCC)=O

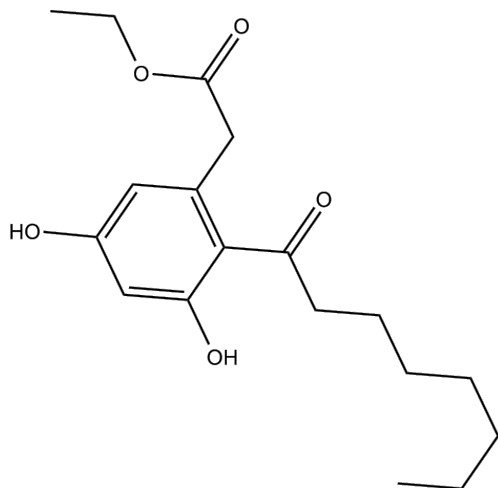
Formula $C_{18}H_{26}O_5$ M.Wt 322.4

Solubility $\geq 32.2\text{mg/mL}$ in DMSO 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]:

Cell lines MCF-7 cells (human breast cancer cell line)

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

MCF-7 cells were maintained in Dulbecco's Modified Eagle's Medium (DMEM) supplemented with 10% fetal bovine serum (FBS) and 1% antibiotic/antimycotic Preparation Method at 37°C, 5% CO₂. Cells were serum-starved for 12 hours before treatment. Cytosporone B (10μM) was added to the medium and cells were treated for 24 hours.

Reaction
Conditions 10μM; 24h

Applications Cytosporone B significantly downregulated the expression of CD36 and FABP4, which are involved in fatty acid uptake. It also decreased fatty acid uptake and lipid droplet accumulation in MCF-7 cells, leading to reduced cell proliferation

Animal experiment [2]:

Animal models C57Bl/6 mice

Mice were intranasally infected with influenza virus (IAV) strain A/Puerto Rico/8/34 (H1N1) at a sublethal dose of 50 plaque-forming units (PFU). Preparation Method Cytosporone B was administered intraperitoneally at a dose of 5mg/kg daily starting one day post-infection. Mice were sacrificed at days 3, 5, 7, and 9 post-infection for lung viral load determination and histological analysis.

Dosage form 5mg/kg; i.p.

Applications Cytosporone B significantly reduced lung viral loads, increased type I interferon (IFN-β and IFN-α) production, and improved pulmonary function in IAV-infected mice.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

References:

- [1] Yang PB, Hou PP, Liu FY, et al. Blocking PPAR γ interaction facilitates Nur77 interdiction of fatty acid uptake and suppresses breast cancer progression. Proc Natl Acad Sci U S A. 2020 Nov 3;117(44):27412-27422.
- [2] Egarnes B, Blanchet MR, Gosselin J. Treatment with the NR4A1 agonist cytosporone B controls influenza virus infection and improves pulmonary function in infected mice. PLoS One. 2017 Oct 20;12(10):e0186639.

Background

Cytosporone B is a natural fungal metabolite with broad-spectrum antifungal activity and has strong inhibitory effects on various pathogenic fungi, including *Candida* and *Aspergillus* species^[1].

Cytosporone B is also an agonist for Nur77/NR4A1, with an EC₅₀ of 0.278nM^[2]. Cytosporone B can regulate the cell cycle, exert anti-inflammatory effects, and modulate immune functions^[3].

Additionally, Cytosporone B has demonstrated inhibit tumor cell growth^[4]

In vitro, treatment of MCF-7 cells with Cytosporone B (10 μ M) for 24 hours activates Nur77, downregulates the transcriptional activity and mRNA levels of CD36 and FABP4 in MCF-7 cells, reduces lipid droplet accumulation, and inhibits cell proliferation^[5]. Treatment of human vocal fold fibroblasts (HVOX cell line) with Cytosporone B (1 μ M) for 24 hours significantly downregulates the expression of COL1A1 and ACTA2 under TGF- β 1 (10ng/ml) stimulation. Cytosporone B also reduces TGF- β 1-mediated collagen gel contraction^[6].

In vivo, Cytosporone B (10mg/kg) was administered orally once daily to C57BL/6N mice starting on day 14 after induction of experimental autoimmune encephalomyelitis (EAE) and continued until day 21. Cytosporone B significantly alleviated clinical symptoms in EAE mice, reduced the percentages of CD4⁺ T cells and F4/80⁺ cells in the central nervous system^[7]. In mice infected with influenza virus (IAV), Cytosporone B (5mg/kg) was administered intraperitoneally once daily. Cytosporone B significantly reduced lung viral loads, improved pulmonary function, increased the production of type I interferons (IFN- β and IFN- α), and reduced inflammatory cell infiltration and lung tissue damage^[8].

References:

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

- [1] Yin C, Liu H, Shan Y, et al. Cytosporone B as a Biological Preservative: Purification, Fungicidal Activity and Mechanism of Action against *Geotrichum citri-aurantii*. *Biomolecules*. 2019 Mar 29;9(4):125.
- [2] Zhan Y, Du X, Chen H, et al. Cytosporone B is an agonist for nuclear orphan receptor Nur77. *Nat Chem Biol*. 2008 Sep;4(9):548-56.
- [3] Xiong Y, Ran J, Xu L, et al. Reactivation of NR4A1 Restrains Chondrocyte Inflammation and Ameliorates Osteoarthritis in Rats. *Front Cell Dev Biol*. 2020 Mar 17;8:158.
- [4] Guan YF, Huang QL, Ai YL, et al. Nur77-activated lncRNA WFDC21P attenuates hepatocarcinogenesis via modulating glycolysis. *Oncogene*. 2020 Mar;39(11):2408-2423.
- [5] Yang PB, Hou PP, Liu FY, et al. Blocking PPAR γ interaction facilitates Nur77 interdiction of fatty acid uptake and suppresses breast cancer progression. *Proc Natl Acad Sci U S A*. 2020 Nov 3;117(44):27412-27422.
- [6] Hiwatashi N, Mukudai S, Bing R, et al. The effects of cytosporone-B, a novel antifibrotic agent, on vocal fold fibroblasts. *Laryngoscope*. 2018 Dec;128(12):E425-E428.
- [7] Yu HZ, Zhu BQ, Zhu L, et al. NR4A1 agonist cytosporone B attenuates neuroinflammation in a mouse model of multiple sclerosis. *Neural Regen Res*. 2022 Dec;17(12):2765-2770.
- [8] Egarnes B, Blanchet MR, Gosselin J. Treatment with the NR4A1 agonist cytosporone B controls influenza virus infection and improves pulmonary function in infected mice. *PLoS One*. 2017 Oct 20;12(10):e0186639.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA