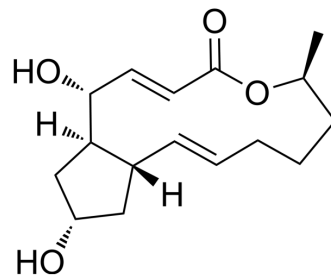


Brefeldin A

| | | | |
|---------------------------|---|-------|---------|
| Cat. No.: | HY-16592 | | |
| CAS No.: | 20350-15-6 | | |
| Molecular Formula: | C ₁₆ H ₂₄ O ₄ | | |
| Molecular Weight: | 280.36 | | |
| Target: | Autophagy; CRISPR/Cas9; Mitophagy; HSV; Antibiotic; Bacterial | | |
| Pathway: | Autophagy; Cell Cycle/DNA Damage; Anti-infection | | |
| 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 (356.68 mM; Need ultrasonic)
Ethanol : 11.11 mg/mL (39.63 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent Concentration | Mass | | |
|---------------------------|-----------------------|-----------|------------|------------|
| | | 1 mg | 5 mg | 10 mg |
| | 1 mM | 3.5668 mL | 17.8342 mL | 35.6684 mL |
| | 5 mM | 0.7134 mL | 3.5668 mL | 7.1337 mL |
| | 10 mM | 0.3567 mL | 1.7834 mL | 3.5668 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 (8.92 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (8.92 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (8.92 mM); Clear solution
- Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (8.92 mM); Clear solution
- Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (8.92 mM); Clear solution
- Add each solvent one by one: 10% EtOH >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (8.92 mM); Clear solution

BIOLOGICAL ACTIVITY

| | | |
|-------------------------------------|---|-------|
| Description | Brefeldin A (BFA) is a lactone antibiotic and a specific inhibitor of protein trafficking. Brefeldin A blocks the transport of secreted and membrane proteins from endoplasmic reticulum to Golgi apparatus ^{[1][2]} . Brefeldin A is also an autophagy and mitophagy inhibitor ^[3] . Brefeldin A is a CRISPR/Cas9 activator ^[5] . Brefeldin A inhibits HSV-1 and has anti-cancer activity ^[5] . | |
| IC₅₀ & Target | CRISPR/Cas9 | HSV-1 |
| In Vitro | Brefeldin A (BFA) treatment for 15 h or 40 h, causes dramatic swelling of the Endoplasmic Reticulum (ER) and shifts its localization to the periphery of normal rat kidney (NRK) cells. Prolonged Brefeldin A treatment results in marked disruption of the MT and actin cytoskeleton ^[1] . ADP-ribosylation of BARS is mediated by formation of a conjugate between Brefeldin A and ADPR. BARS shows BAC binding when incubated with the medium from the BFA-treated CD38 ⁺ HeLa cells ^[3] . Brefeldin A induces anchorage-independent cell death in MDA-MB-231 breast cancer cells, inhibits the formation of MDA-MB-231 colonies in 3D and 2D cultures and inhibits the migration and MMP 9 (Matrix Metalloproteinase 9) activity of MDA-MB-231 ^[2] . MCE has not independently confirmed the accuracy of these methods. They are for reference only. | |

PROTOCOL

Cell Assay^[1]

Cells are grown on glass coverslips, fixed in 3 % paraformaldehyde in PBS (10 min at room temperature) and then washed in PBS. Cells are permeabilized with 0.01 % Triton X-100 in PBS at room temperature for 7 min. The coverslips are washed (3 times in PBS/0.2 % Tween) incubated in PBS/0.4 % fish skin gelatin/0.2 % Tween (5 min) and in PBS/2.5 % goat serum/0.2 % Tween (5 min.). After blocking, the cells are incubated with primary antibodies for 45 min at 37°C, and then washed with PBS/0.2 % Tween (5 times, 5 min each). The secondary antibodies are added for 30 min at 37°C and then cells are washed as above. Coverslips are mounted on slides in 9: 1 glycerol/PBS with 0.1 % o-phenylenediamine.

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

CUSTOMER VALIDATION

- Signal Transduct Target Ther. 2023 Jul 17;8(1):273.
- Nat Microbiol. 2022 Sep;7(9):1361-1375.
- Nat Commun. 2023 Jul 20;14(1):4367.
- Adv Sci (Weinh). 2024 Mar 14:e2306378.
- Adv Sci (Weinh). 2023 Oct 22:e2303615.

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- [1]. Alvarez C, et al. Brefeldin A (BFA) disrupts the organization of the microtubule and the actin cytoskeletons. *Eur J Cell Biol.* 1999 Jan;78(1):1-14.
- [2]. Colanzi A, et al. Molecular mechanism and functional role of brefeldin A-mediated ADP-ribosylation of CtBP1/BARS. *Proc Natl Acad Sci U S A.* 2013 Jun 11;110(24):9794-9.
- [3]. Tseng CN, et al. Brefeldin A reduces anchorage-independent survival, cancer stem cell potential and migration of MDA-MB-231 human breast cancer cells. *Molecules.* 2014 Oct 29;19(11):17464-77.
- [4]. Wang J, et al. Erythroleukemia cells acquire an alternative mitophagy capability. *Sci Rep.* 2016 Apr 19;6:24641.
- [5]. Yu C, et al. Small molecules enhance CRISPR genome editing in pluripotent stem cells. *Cell Stem Cell.* 2015 Feb 5;16(2):142-7.

[6]. Nozawa N, et al. Subcellular localization of herpes simplex virus type 1 UL51 protein and role of palmitoylation in Golgi apparatus targeting. J Virol. 2003 Mar;77(5):3204-16.

[7]. Jensen HL, Rygaard J, Norrild B. A time-related study of Brefeldin A effects in HSV-1 infected cultured human fibroblasts. APMIS. 1995;103(7-8):530-539.
doi:10.1111/j.1699-0463.1995.tb01402.x

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

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