Product Datasheet

Technical Data

Formula	$C_{18}H_{17}NO_5$					
Molecular Weight	327.33	**CAS No.**	890405-51-3			
Solubility (25°C)*	In vitro	DMSO	65 mg/mL (198.57 mM)			
		Ethanol	32 mg/mL (97.76 mM)			
		Water	Insoluble			
	In vivo (Add solvents to the product individually and in order)	Oral Administration	Homogeneous suspension	CMC-NA	≥5mg/ml	Taking the 1 mL working solution as an example, add 5 mg of this product to 1 ml of CMC-Na solution, mix evenly to obtain a homogeneous suspension with a final concentration of 5 mg/ml.
		Injection	Clear solution	5%DMSO [1]→ 40%PEG300 [2]→ 5%Tween80 [3]→ 50%ddH2O Validated by Capsid Bio labs. Should you need adjustments to this formulation, contact our sales team for custom testing.	3.250mg/ml (9.93mM)	Taking the 1 mL working solution as an example, add 50 μL of 65 mg/ml clarified DMSO stock solution to 400 μL of PEG300, mix evenly to clarify it; add 50 μL of Tween80 to the above system, mix evenly to clarify; then continue to add 500 μL of ddH2O to adjust the volume to 1 mL. The mixed solution should be used immediately for optimal results.
			Clear solution	5% DMSO [1]→ 95% Corn oil Validated by Capsid Bio labs. Should you need adjustments to this formulation, contact our sales team for custom testing.	1.600mg/ml (4.89mM)	Taking the 1 mL working solution as an example, add 50 μL of 32 mg/ml clear DMSO stock solution to 950 μL of corn oil and mix evenly. The mixed solution should be used immediately for optimal results.

* <1 mg/ml means slightly soluble or insoluble.
* Please note that Capsid Bio tests the solubility of all compounds in-house, and the actual solubility may differ slightly from published values. This is normal and is due to slight batch-to-batch variations.
* Room temperature shipping (Stability testing shows this product can be shipped at 2-8°C for storage purposes.)

Preparing Stock Solutions

Concentration \ Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.0550 mL	15.2751 mL	30.5502 mL
5 mM	0.6110 mL	3.0550 mL	6.1100 mL
10 mM	0.3055 mL	1.5275 mL	3.0550 mL
50 mM	0.0611 mL	0.3055 mL	0.6110 mL

Biological Activity

Description	3BDO, a butyrolactone derivative, could target **FKBP1A** and activate the **mTOR** signaling pathway. It inhibits **autophagy** in HUVECs. This compound inhibits oxLDL-induced **apoptosis**.
Targets	FKBP1A [1] (Cell-free assay)
In vitro	3BDO inhibits autophagy in human umbilical vein endothelial cells (HUVECs) and neuronal cells. It suppresses lipopolysaccharide-induced HUVEC autophagic injury by downregulating the protein levels of NUPR1 (nuclear protein, transcriptional regulator) and TP53 (tumor protein p53), TP53 nuclear translocation and reactive oxygen species overproduction. This compound activates MTOR by targeting FKBP1A (FK506-binding protein 1A, 12 kDa). It greatly decreases the level of a long noncoding RNA (lncRNA) derived from the 3′ untranslated region (3′UTR) of TGFB2, known as FLJ11812, but does not affect TGFB2 expression. ATG13 protein level is decreased along with this compound-decreased FLJ11812 level. It inhibits excessive Aβ (25 to 35) peptide-induced autophagy in PC12 neuronal cells and increased the phosphorylation of RPS6KB1[1]. This chemical could inhibit human umbilical vein EC (HUVEC) apoptosis and senescence induced by deprivation of serum and basic fibroblast growth factor 2. iT selectively protecteS vascular ECs (VECs) and inhibitS vascular smooth muscle cell (VSMC) proliferation and migration[2]. It (20-60 μg/ml) could inhibit VEC apoptosis and suppress integrin β4 expression, but it could not depress the ROS level induced by deprivation of serum and FGF-2[3].
In vivo	In vivo experiments showed that 3BDO had a good safety profile. This compound treatment could significantly reduce the number of autophagosomes and improve neuronal function in App and Psen1 transgenic mice[1]. It activated mTOR in vivo and decreased the protein level of ATG13 in the plaque endothelium of apoE-/- mice. It does not affect the activity of mTOR and autophagy in macrophage cell line RAW246.7 and vascular smooth muscle cells of apoE-/- mice, but suppressed plaque endothelial cell death and restricted atherosclerosis development in the mice. This chemical protecteS VECs by activating mTOR and thus stabilized atherosclerotic lesions in apoE-/- mice[2].

Protocol (from reference)

Cell Assay:[1]

- **Cell lines**
  HUVECs
- **Concentrations**
  60 μM
- **Incubation Time**
  24 h
- **Method**
  HUVECs are cultured in M199 medium with 20% (v/v) fetal bovine serum and 10 IU/mL fibroblast growth factor 2 (FGF2) in a humidified incubator at 37 °C with 5% CO2. When HUVECs were grown to 80% confluency, cells were treated with or without this compound. HUVECs were treated with DMSO or 60 μM of this chemical for 24 h, then total RNA was extracted with use of Trizol reagent. The cDNA microarray assay in response to this compound treatment was performed.

Animal Study:[2]

- **Animal Models**
  Male apoE-/- mice (8 weeks old; C57BL/6J-knockout)
- **Dosages**
  50 mg/kg/d OR 100 mg/kg/d
- **Administration**
  i.p.

References

https://pubmed.ncbi.nlm.nih.gov/24879147/ https://pubmed.ncbi.nlm.nih.gov/24980430/ https://pubmed.ncbi.nlm.nih.gov/17067796/

RETURN POLICY

Capsid Bio's Unconditional Return Policy ensures a smooth online shopping experience for our customers. If you are in any way unsatisfied with your purchase, you may return any item(s) within 7 days of receiving it. In the event of product quality issues, either protocol related or product related problems, you may return any item(s) within 365 days from the original purchase date. Please follow the instructions below when returning products.

SHIPPING & STORAGE

Capsid Bio products are transported at room temperature. If you receive the product at room temperature, please rest assured, the Capsid Bio Quality Inspection Department has conducted experiments to verify that the normal temperature placement of one month will not affect the biological activity of powder products. After collecting, please store the product according to the requirements described in the datasheet. Most Capsid Bio products are stable under the recommended conditions.

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