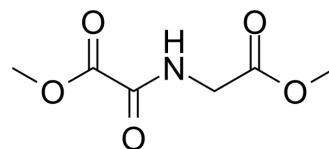


## DMOG

|                           |   |       |          |
|---------------------------|---|-------|----------|
| <b>Cat. No.:</b>          | HY-15893                                      |       |          |
| <b>CAS No.:</b>           | 89464-63-1                                    |       |          |
| <b>Molecular Formula:</b> | C <sub>6</sub> H <sub>9</sub> NO <sub>5</sub> |       |          |
| <b>Molecular Weight:</b>  | 175.14  |       |          |
| <b>Target:</b>            | HIF/HIF Prolyl-Hydroxylase; Autophagy         |       |          |
| <b>Pathway:</b>           | Metabolic Enzyme/Protease; Autophagy          |       |          |
| <b>Storage:</b>           | Powder  | -20°C | 3 years  |
|                           |   | 4°C   | 2 years  |
|                           | In solvent                                    | -80°C | 1 year   |
|                           |   | -20°C | 6 months |



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 100 mg/mL (570.97 mM; Need ultrasonic)  
 H<sub>2</sub>O : 50 mg/mL (285.49 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent       |      | 1 mg      | 5 mg       | 10 mg      |
|---------------------------|---------------|------|-----------|------------|------------|
|                           | Concentration | Mass |           |            |            |
|                           | 1 mM          |      | 5.7097 mL | 28.5486 mL | 57.0972 mL |
|                           | 5 mM          |      | 1.1419 mL | 5.7097 mL  | 11.4194 mL |
|                           | 10 mM         |      | 0.5710 mL | 2.8549 mL  | 5.7097 mL  |

Please refer to the solubility information to select the appropriate solvent.

#### In Vivo

1. Add each solvent one by one: PBS  
 Solubility: 150 mg/mL (856.46 mM); Clear solution; Need ultrasonic

### BIOLOGICAL ACTIVITY

#### Description

DMOG (Dimethyloxallyl Glycine) is a cell permeable and competitive inhibitor of HIF-PH, which results in HIF-1 $\alpha$  stabilisation and accumulation in vitro and in vivo<sup>[1]</sup>. DMOG is an  $\alpha$ -ketoglutarate analogue and inhibits  $\alpha$ -KG-dependent hydroxylases. DMOG acts as a pro-angiogenic agent and plays a protective role in experimental model of colitis and diarrhoea via HIF-1 related signal<sup>[2][4]</sup>. DMOG induces cell autophagy<sup>[5]</sup>.

#### IC<sub>50</sub> & Target

HIF-1 $\alpha$  prolyl hydroxylase<sup>[1]</sup>

#### In Vitro

DMOG efficiently suppresses hydroxyproline synthesis in intact cells, but shows only weakly active in the microsomal system<sup>[1]</sup>. DMOG reduces FGF-2-induced proliferation and cyclin A expression by inhibiting prolyl hydroxylase activity in HPASMC<sup>[3]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

|                |   |
|----------------|---|
| <b>In Vivo</b> | DMOG inhibits endogenous HIF inactivation, and induces angiogenesis in ischaemic skeletal muscles of mice <sup>[2]</sup> . Up-regulation of hypoxia-inducible factor-1 $\alpha$ by DMOG enhances the cardioprotective effects of ischemic postconditioning in hyperlipidemic rats <sup>[4]</sup> .<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
|----------------|---|

## PROTOCOL

|   |   |
|---|---|
| <b>Cell Assay</b> <sup>[3]</sup>            | To analyze DNA synthesis as an index of cellular proliferation, VSMC are plated in 48-well plates (5,000 per square centimeter) in growth medium, incubated overnight, and serum-deprived (1% FCS) for 24 h. Replicate wells are then stored at -70°C for baseline (day 0) cell counts, and fresh medium with or without growth factors is added to the remaining wells, which are incubated 72-96 h in 20 or 5% O <sub>2</sub> . Days 0 and 3 or 4 cell counts are determined by lysing cells in a buffer containing a fluorescent dye, which has minimal fluorescence by itself but fluoresces when bound to DNA or RNA. Absolute cell numbers are calculated by comparing the fluorescence of specimens with that of a standard curve similarly prepared using a known number of cells.<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| <b>Animal Administration</b> <sup>[2]</sup> | Two groups of mice (C57Bl6) are used. One group (n=11) receives dimethyloxalylglycine (DMOG) i.p. (8 mg in 0.5 mL saline) on days 1, 3, 5, 7 and 9 while the animals in the other group are injected with sterile saline (0.5 mL) at the same intervals (n=6). A third group is treated with DMOG without ligation (n=4) and four unoperated mice serve as controls. After 11 days mice are terminally anaesthetized and the extensor digitorum longus (EDL) and tibialis anterior (TA) muscles excised.<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only.   |

## CUSTOMER VALIDATION

- Cell Res. 2021 Sep;31(9):980-997.
- Bioact Mater. 2020 Oct 26;6(4):1175-1188.
- Biomaterials. 2022 Jun;285:121530.
- Cell Death Differ. 2021 May;28(5):1593-1609.
- Theranostics. 2020 Jun 12;10(16):7409-7421.

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## REFERENCES

- [1]. Baader E, et al. Inhibition of prolyl 4-hydroxylase by oxalyl amino acid derivatives in vitro, in isolated microsomes and in embryonic chicken tissues. *Biochem J.* 1994 Jun 1;300 (Pt 2):525-30.
- [2]. Milkiewicz M, et al. Inhibition of endogenous HIF inactivation induces angiogenesis in ischaemic skeletal muscles of mice. *J Physiol.* 2004 Oct 1;560(Pt 1):21-6.
- [3]. Schultz K, et al. Prolyl hydroxylase 2 deficiency limits proliferation of vascular smooth muscle cells by hypoxia-inducible factor-1{alpha}-dependent mechanisms. *Am J Physiol Lung Cell Mol Physiol.* 2009 Jun;296(6):L921-7.
- [4]. Li X, et al. Up-regulation of hypoxia-inducible factor-1 $\alpha$  enhanced the cardioprotective effects of ischemic postconditioning in hyperlipidemic rats. *Acta Biochim Biophys Sin (Shanghai).* 2014 Feb;46(2):112-8.
- [5]. Singh A, et al. Hypoxia-inducible factor (HIF) prolyl hydroxylase inhibitors induce autophagy and have a protective effect in an in-vitro ischaemia model. *Sci Rep.* 2020 Jan 31;10(1):1597.

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

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