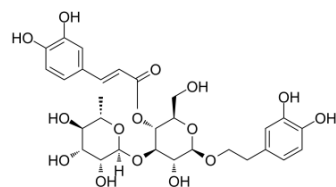


## Verbascoside

<b>Cat. No.:</b>	HY-N0021												
<b>CAS No.:</b>	61276-17-3												
<b>Molecular Formula:</b>	C <sub>29</sub> H <sub>36</sub> O <sub>15</sub>												
<b>Molecular Weight:</b>	624.59												
<b>Target:</b>	PKC; Apoptosis; Bacterial; HSV												
<b>Pathway:</b>	Epigenetics; TGF-beta/Smad; Apoptosis; Anti-infection												
<b>Storage:</b>	<table border="0"> <tr> <td>Powder</td> <td>-20°C</td> <td>3 years</td> </tr> <tr> <td></td> <td>4°C</td> <td>2 years</td> </tr> <tr> <td>In solvent</td> <td>-80°C</td> <td>6 months</td> </tr> <tr> <td></td> <td>-20°C</td> <td>1 month</td> </tr> </table>	Powder	-20°C	3 years		4°C	2 years	In solvent	-80°C	6 months		-20°C	1 month
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	4°C	2 years											
In solvent	-80°C	6 months											
	-20°C	1 month											



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : ≥ 100 mg/mL (160.11 mM)  
 \* "≥" means soluble, but saturation unknown.

Concentration	Mass		
	1 mg	5 mg	10 mg
<b>1 mM</b>	1.6011 mL	8.0053 mL	16.0105 mL
<b>5 mM</b>	0.3202 mL	1.6011 mL	3.2021 mL
<b>10 mM</b>	0.1601 mL	0.8005 mL	1.6011 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: ≥ 2.08 mg/mL (3.33 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
 Solubility: ≥ 2.08 mg/mL (3.33 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 2.08 mg/mL (3.33 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Verbascoside is isolated from *Lantana camara*, acts as an ATP-competitive inhibitor of PKC, with an IC<sub>50</sub> of 25 μM, and has antitumor, anti-inflammatory and antineuropathic pain activity.

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

PKC  
 25 μM (IC<sub>50</sub>)

<b>In Vitro</b>	<p>Verbascoside acts as an ATP-competitive inhibitor of PKC, with an IC<sub>50</sub> of 25 μM. Verbascoside shows K<sub>i</sub>s of 22 and 28 μM with respect to ATP and histone, respectively. Verbascoside has potent antitumor activity against L-1210 cells, with an IC<sub>50</sub> of 13 μM<sup>[1]</sup>. Verbascoside (5, 10 μM) suppresses 2,4-dinitrochlorobenzene (DNCB)-induced T cell costimulatory factors CD86 and CD54, proinflammatory cytokines, and NFκB pathway activation in THP-1 cells<sup>[2]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>In Vivo</b>	<p>Verbascoside (1%) reduces the overall scratching behavior incidence as well as the severity of the skin lesions in 2,4-dinitrochlorobenzene (DNCB)-induced atopic dermatitis (AD) mice model. Verbascoside also blocks DNCB-induced expression of proinflammatory cytokine TNF-α, IL-6, and IL-4 mRNA in skin lesions<sup>[2]</sup>. Verbascoside (50, 100 mg/kg, i.p.) does not modify chronic constriction injury (CCI)-induced cold allodynia. Verbascoside (200 mg/kg, i.p.) decreases hypersensitivity to cold stimulus, acetone, on day 3 in rats. Verbascoside also significantly reduces behavioral changes associated with neuropathy. Moreover, Verbascoside decreases Bax and increases Bcl-2 on day 3<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## PROTOCOL

<b>Cell Assay</b> <sup>[1]</sup>	<p>The lymphocytic mouse leukemia L1210 cells (ATCC, CCL 219) are plated sparsely at 10<sup>4</sup> cells per well in 24-well cluster plates in Dulbecco's modified Eagle medium containing 10% fetal calf serum, 4 mM glutamine, 100 U/mL penicillin, 100 μg/mL streptomycin sulfate, and Verbascoside (solubilized in DMSO). After a 2-day incubation period at 37°C in a humidified atmosphere (5% CO<sub>2</sub> in air), growth is monitored by counting cell numbers in a Coulter-counter. IC<sub>50</sub> values are calculated on the basis of the linear regression lines established for each compound tested<sup>[1]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>Animal Administration</b> <sup>[2]</sup>	<p>Rats<sup>[2]</sup></p> <p>To induce atopic dermatitis (AD)-like symptoms, 2,4-dinitrochlorobenzene (DNCB) is used. Briefly, the dorsal hair of the mice is removed using an electronic clipper 2 days before DNCB treatment. An application of 200 μL of 1% DNCB (in acetone:olive oil = 4:1) is made to the shaved dorsal skin for sensitization. The repeated challenge is performed on the same site with 0.2% DNCB once every 3 days for about 2 weeks. The mice are divided into 4 groups (n = 6 per group): (1) vehicle-treated controls, (2) DNCB-treated only, (3) 1% Verbascoside (in acetone:olive oil 4:1)-treated only, and (4) DNCB + 1% Verbascoside-treated group<sup>[2]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## CUSTOMER VALIDATION

- Cell. 2021 Apr 1;184(7):1693-1705.e17.
- Cell Biochem Biophys. 2021 Jan 13.
- Patent. US20210085739A1.

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## REFERENCES

- [1]. Herbert JM, et al. Verbascoside isolated from Lantana camara, an inhibitor of protein kinase C. J Nat Prod. 1991 Nov-Dec;54(6):1595-600.
- [2]. Li Y, et al. Verbascoside Alleviates Atopic Dermatitis-Like Symptoms in Mice via Its Potent Anti-Inflammatory Effect. Int Arch Allergy Immunol. 2018;175(4):220-230.
- [3]. Amin B, et al. The Effect of Verbascoside in Neuropathic Pain Induced by Chronic Constriction Injury in Rats. Phytother Res. 2016 Jan;30(1):128-35.

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

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