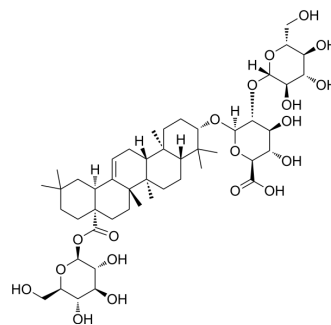


## Ginsenoside Ro

<b>Cat. No.:</b>	HY-N0607		
<b>CAS No.:</b>	34367-04-9		
<b>Molecular Formula:</b>	C <sub>48</sub> H <sub>76</sub> O <sub>19</sub>		
<b>Molecular Weight:</b>	957.11		
<b>Target:</b>	Calcium Channel; Prostaglandin Receptor		
<b>Pathway:</b>	Membrane Transporter/Ion Channel; Neuronal Signaling; GPCR/G Protein		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 100 mg/mL (104.48 mM; Need ultrasonic)				
		Solvent Concentration	Mass 1 mg	5 mg	10 mg
	<b>Preparing Stock Solutions</b>	1 mM	1.0448 mL	5.2241 mL	10.4481 mL
		5 mM	0.2090 mL	1.0448 mL	2.0896 mL
10 mM		0.1045 mL	0.5224 mL	1.0448 mL	
Please refer to the solubility information to select the appropriate solvent.					
<b>In Vivo</b>	<ol style="list-style-type: none"> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 40% PEG300 &gt;&gt; 5% Tween-80 &gt;&gt; 45% saline Solubility: ≥ 2.5 mg/mL (2.61 mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.5 mg/mL (2.61 mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% corn oil Solubility: ≥ 2.5 mg/mL (2.61 mM); Clear solution</li> </ol>				

### BIOLOGICAL ACTIVITY

<b>Description</b>	Ginsenoside Ro (Polysciasaponin P3; Chikusetsusaponin 5; Chikusetsusaponin V) exhibits a Ca <sup>2+</sup> -antagonistic antiplatelet effect with an IC <sub>50</sub> of 155 μM. Ginsenoside Ro reduces the production of TXA <sub>2</sub> more than it reduces the activities of COX-1 and TXAS.
<b>IC<sub>50</sub> &amp; Target</b>	TXA <sub>2</sub>
<b>In Vitro</b>	Ginsenoside Ro in Panax ginseng is a beneficial novel Ca <sup>2+</sup> -antagonistic compound and may prevent platelet aggregation-

mediated thrombotic disease. Ginsenoside Ro dose-dependently reduces thrombin-stimulated platelet aggregation, and  $IC_{50}$  is approximately  $155 \mu M$ <sup>[1]</sup>. Ginsenoside Ro inhibits  $TXA_2$  production to abolish thrombin-induced platelet aggregation. Thromboxane  $A_2$  ( $TXA_2$ ) induces platelet aggregation and promotes thrombus formation. Ginsenoside Ro dose-dependently ( $50-300 \mu M$ ) reduces the  $TXB_2$  level that is induced by thrombin; Ginsenoside Ro ( $300 \mu M$ ) inhibits the thrombin-mediated elevation in  $TXB_2$  level by 94.9%. COX-1 activity in the absence of Ginsenoside Ro (negative control) is  $2.3 \pm 0.1$  nmol/mg protein. However, Ginsenoside Ro dose-dependently ( $50-300 \mu M$ ) reduces its activity; at  $300 \mu M$ , COX-1 activity is reduced by 26.4% of that of the negative control.  $TXA_2$  synthase (TXAS) activity in the absence of Ginsenoside Ro (negative control) is  $220.8 \pm 1.8$  ng/mg protein/min. However, Ginsenoside Ro dose-dependently ( $50-300 \mu M$ ) reduces its activity; at  $300 \mu M$ , TXAS activity is reduced by 22.9% of that of the negative control. The inhibitory effect of Ginsenoside Ro ( $300 \mu M$ ) on  $TXB_2$  production (94.9%) is significantly higher than those on COX-1 (26.4%) and TXAS (22.9%) activities<sup>[2]</sup>. To assess the toxicity of Ginsenoside Ro in Raw 264.7 cells, they are first treated with various concentrations ( $10 \mu M$ ,  $50 \mu M$ ,  $100 \mu M$ , and  $200 \mu M$ ) of Ginsenoside Ro for 24 h. Ginsenoside Ro exhibits no significant dose dependent toxicity. The effect of Ginsenoside Ro is next determined on cell viability and ROS levels, a marker of oxidative stress, following treatment with  $1 \mu g/mL$  LPS. LPS reduces cell viability by -70% compared with nontreated controls. Pretreatment with  $100 \mu M$  and  $200 \mu M$  Ginsenoside Ro for 1 h prior to  $1 \mu g/mL$  LPS incubation for 24 h leads to a significant increase in cell viability. The changes in ROS levels and NO production are consistent with the effects of Ginsenoside Ro on viability<sup>[3]</sup>.

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

#### In Vivo

Ginsenoside Ro dissolved in water is administrated by gavage to mice at doses of 25 and 250 mg/kg/day for 4 days before i.v. injection of HT29 in order to keep blood concentrations of Ginsenoside Ro above a certain level before HT29 i.v. injection followed by 40 days of oral administration of Ginsenoside Ro to the mice. After 38 days of treatment, the animals are euthanized, and the number of pulmonary metastatic nodules is counted in addition to evaluation of toxicity of Ginsenoside Ro and mouse pathology by HT29. Ginsenoside Ro ( $250 \text{ mg/kg/day}$ ) produces a significant decrease in the number of tumor nodules on the lung surface, yielding inhibition rates of 88% ( $P < 0.01$ )<sup>[4]</sup>.

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

## PROTOCOL

#### Kinase Assay <sup>[2]</sup>

The microsomal fraction of platelets is preincubated with Ozagrel ( $11 \text{ nM}$ ,  $IC_{50}$ ), a positive control, or with various concentrations of Ginsenoside Ro and other reagents at  $37^\circ C$  for 5 min. The reaction is initiated by adding prostaglandin  $H_2$ , and the samples are incubated at  $37^\circ C$  for 1 min; the reaction is terminated by adding citric acid ( $1 \text{ M}$ ). After neutralization with  $1 \text{ N NaOH}$ , the amount of  $TXB_2$  is determined using a  $TXB_2$  EIA kit<sup>[2]</sup>.

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

#### Cell Assay <sup>[3]</sup>

Cell viability is determined with an MTT assay kit. Briefly, Raw 264.7 cells are plated in 48-well plates at a density of  $2.0 \times 10^4$  cells per well, incubated for 24 h, and treated with various concentrations of Ginsenoside Ro for 24 h. How 1 h of pretreatment with Ginsenoside Ro ( $50 \mu M$ ,  $100 \mu M$ , and  $200 \mu M$ ) affects the viability of Raw 264.7 cells is then investigated treated with  $1 \mu g/mL$  LPS for 24 h. After the incubation period,  $10 \mu L$  of MTT reagent is added to each well and incubated for 3 h at  $37^\circ C$  in 5%  $CO_2$ . The resulting formazan crystals are subsequently dissolved in MTT solubilization solution. The absorbance is determined at 540 nm using a microplate reader<sup>[3]</sup>.

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

#### Animal Administration <sup>[4]</sup>

Mice<sup>[4]</sup>

Female BALB/c mice (20-25 g, 6-8 weeks old) are used. The experimental model of lung metastasis is established by tail vein injection of HT29 cells to mimic the dissemination of CTCs. HT29 cells in the number of  $2 \times 10^6$  cells in  $0.2 \text{ mL}$  PBS are injected into the tail vein of six-week-old female Balb/c mice. Before the HT29 inoculation, oral gavage pretreatment of PBS-suspended B (Ginsenoside Ro) is given daily for 4 days, followed by a 40-day treatment. Treatment groups ( $N = 10$ ) include:  $0 \text{ mg/kg}$ ,  $25 \text{ mg/kg}$  and  $250 \text{ mg/kg}$  Ginsenoside Ro. Body weight is measured and recorded every four days. Mice are sacrificed after 40 days of tumor metastasis and growth and 44 days of treatment with B. The number of surface lung metastasis nodules is evaluated in each treatment group. Slides with 4-5  $\mu m$  thick lung section are prepared, paraffin embedded and then stained with hematoxylin and eosin<sup>[4]</sup>.

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

---

## CUSTOMER VALIDATION

- Research Square Preprint. 2021 Feb.

See more customer validations on [www.MedChemExpress.com](http://www.MedChemExpress.com)

## REFERENCES

- [1]. Kwon HW, et al. Inhibitory Effects of Cytosolic  $Ca^{2+}$  Concentration by Ginsenoside Ro Are Dependent on Phosphorylation of IP3RI and Dephosphorylation of ERK in Human Platelets. *Evid Based Complement Alternat Med.* 2015;2015:764906.
- [2]. Jung-HaeShin, et al. Inhibitory effects of thromboxane A2 generation by ginsenoside Ro due to attenuation of cytosolic phospholipase A2 phosphorylation and arachidonic acid release. *J Ginseng Res.* 9 Jan 2018.
- [3]. Kim S, et al. Upregulation of heme oxygenase-1 by ginsenoside Ro attenuates lipopolysaccharide-induced inflammation in macrophage cells. *J Ginseng Res.* 2015 Oct;39(4):365-70.
- [4]. Jiang Z, et al. The traditional Chinese medicine *Achyranthes bidentata* and our de novo conception of its metastatic chemoprevention: from phytochemistry to pharmacology. *Sci Rep.* 2017 Jun 20;7(1):3888.
- 

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

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA