Ginsenoside Rf

Cat. No.: HY-N0601

CAS No.: 52286-58-5

Molecular Formula: $C_{42}H_{72}O_{14}$

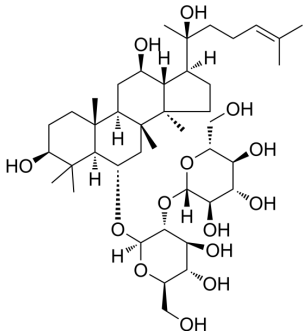
Molecular Weight: 801.01

Target: Calcium Channel; Endogenous Metabolite

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling; Metabolic Enzyme/Protease

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 (124.84 mM; Need ultrasonic)

Ethanol : 50 mg/mL (62.42 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.2484 mL	6.2421 mL	12.4842 mL
5 mM	0.2497 mL	1.2484 mL	2.4968 mL
10 mM	0.1248 mL	0.6242 mL	1.2484 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (3.12 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (3.12 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (3.12 mM); Clear solution
4. Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (3.12 mM); Clear solution
5. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (3.12 mM); Clear solution
6. Add each solvent one by one: 10% EtOH >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (3.12 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	Ginsenoside Rf is a trace component of ginseng root. Ginsenoside Rf inhibits N-type Ca^{2+} channel.
IC_{50} & Target	N-type calcium channel
In Vitro	Ginsenoside Rf is a saponin, which is present in only trace amounts within ginseng. At saturating concentrations, Ginsenoside Rf rapidly and reversibly inhibits N-type, and other high-threshold, Ca^{2+} channels in rat sensory neurons to the same degree as a maximal dose of opioids. The effect is dose-dependent (half-maximal inhibition: 40 μM) and it is virtually eliminated by pretreatment of the neurons with pertussis toxin, an inhibitor of G(o) and Gi GTP-binding proteins. Ginsenoside Rf also inhibits Ca^{2+} channels in the hybrid F-11 cell line[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Since inhibition of Ca^{2+} channels in sensory neurons contributes to antinociception by opioids, analgesic actions of Ginsenoside Rf are tested. Dose-dependent antinociception is found by systemic administration of Ginsenoside Rf in mice using two separate assays of tonic pain: in the acetic acid abdominal constriction test, the ED_{50} is 56±9 mg/kg, a concentration similar to those reported for aspirin and acetaminophen in the same assay; in the tonic phase of the biphasic formalin test, the ED_{50} is 129±32 mg/kg[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [2]	Mice[2] Naive, adult (7-12 week old) mice of outbred Swiss-Webster stock are used in all in vivo experiments. Mice are brought to a quiet testing room, and acclimated to table-top Plexiglas observation chambers (30 cm high; 30 cm diameter) for 30 min. They are then weighed and injected with Ginsenoside Rf (25, 50, or 75 mg/kg) or vehicle (preceded by naloxone or saline in one experiment). Twenty min later, a 0.9% solution of glacial acetic acid is injected intraperitoneally (i.p.) in a volume of 10 mL/kg. For the next 30 min, the number of constrictions (writhes)-strong contractions of the abdominal musculature accompanied by dorsoflexion of the back and extension of the hindlimbs-are counted and recorded in 5-min blocks. Four mice (one per chamber) are observed simultaneously by a single, experienced experimenter. To control for the considerable circadian and other environmental variance accompanying this nociceptive assay, two vehicle controls are tested alongside two Ginsenoside Rf-administered mice in every experimental session[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Nah SY, et al. A trace component of ginseng that inhibits Ca^{2+} channels through a pertussis toxin-sensitive G protein. Proc Natl Acad Sci U S A. 1995 Sep 12;92(19):8739-43.

[2]. Mogil JS, et al. Ginsenoside Rf, a trace component of ginseng root, produces antinociception in mice. Brain Res. 1998 May 11;792(2):218-28.

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