Cynaroside

Cat. No.: HY-N0540

CAS No.: 5373-11-5

Molecular Formula: $C_{21}H_{20}O_{11}$

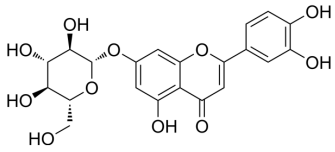
Molecular Weight: 448.38

Target: Influenza Virus; DNA/RNA Synthesis; Apoptosis; Parasite; Bacterial; Fungal

Pathway: Anti-infection; Cell Cycle/DNA Damage; Apoptosis

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 83.33 mg/mL (185.85 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.2303 mL	11.1513 mL	22.3025 mL
5 mM	0.4461 mL	2.2303 mL	4.4605 mL
10 mM	0.2230 mL	1.1151 mL	2.2303 mL

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

In Vivo

1. Add each solvent one by one: 50% PEG300 >> 50% saline
   Solubility: 16.67 mg/mL (37.18 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (4.64 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (4.64 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Cynaroside (Luteolin 7-glucoside) is a flavonoid compound that exhibits anti-oxidative capabilities. Cynaroside is also a potent influenza RNA-dependent RNA polymerase inhibitor with an IC_{50} of 32 nM. Cynaroside also is a promising inhibitor for H_2O_2-induced apoptosis, has cytoprotection against oxidative stress-induced cardiovascular diseases. Cynaroside also has antibacterial, antifungal and anticancer activities, antioxidant and anti-inflammatory activities[1][3][4][5].

IC_{50} & Target

IC50:32 nM (RNA polymerase inhibitor)[2]

In Vitro

Cynaroside promots macrophage phenotypic transition from pro-inflammatory M1 to anti-inflammatory M2, and mitigates sepsis-associated liver inflammatory damage.

?Cynaroside reduces binding of PKM2 to hypoxia-inducible factor-1α (HIF-1α) by abolishing translocation of PKM2 to the nucleus and promoting PKM2 tetramer formation, as well as suppressing phosphorylation of PKM2 at Y105 in vivo and in vitro.

?Cynaroside restores pyruvate kinase activity, inhibits glycolysis-related proteins including PFKFB3, HK2 and HIF-1α, and inhibits glycolysisrelated hyperacetylation of HMGB1 in septic liver.

?Cynaroside protects H9c2 cells against H_2O_2-induced apoptosis by decreasing ROS generation and inhibiting caspase activation in both the mitochondrial and death receptor pathways.

?Cynaroside maintains mitochondrial function by regulating Bcl-2 protein expression, as well as JNK and P53 expression[2][3].

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

Western Blot Analysis[2]

Cell Line:	RAW264.7 cell
Concentration:	5μM, 10μM
Incubation Time:	2 h
Result:	Reduced expression levels of IL-1β, IL-6 and TNF-α and HMGB1, suppressed M1 polarized phenotype in RAW264.7 cells.

Immunofluorescence[2]

Cell Line:	RAW264.7 cell
Concentration:	
Incubation Time:	4 h
Result:	Decreased PKM2 nuclear translocation in hepatic macrophages of septic mice.

RT-PCR[2]

Cell Line:	RAW264.7 cell
Concentration:	2.5μM, 5μM, 10μM
Incubation Time:	
Result:	Increased increased expression levels of M2 markers Arg-1, IL-10 andCD206.

Cell Viability Assay[3]

Cell Line:	H9c2 cells
Concentration:	25, 50, 100 μg/mL
Incubation Time:	4 h
Result:	Protected H9c2 cells from oxidative stress-induced cell injury.

Apoptosis Analysis[3]

Cell Line:	H9c2 cells
Concentration:	25, 50, 100 μg/mL

Incubation Time:	4 h
Result:	Decreased H_2O_2-induced apoptosis in H9C2 cells.

In Vivo

Cynaroside (i.p.; 5mg/kg) reduces binding of PKM2 to hypoxia-inducible factor-1α (HIF-1α) by abolishing translocation of PKM2 to the nucleus and promoting PKM2 tetramer formation, as well as suppressing phosphorylation of PKM2 at Y105[2].

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

Animal Model:	Mice model of sepsis[2]
Dosage:	5mg/kg
Administration:	Cynaroside (i.p.; 5mg/kg)
Result:	Inhibited PKM2 dimer formation in liver of septic mice.

CUSTOMER VALIDATION

- Acta Pharm Sin B. 2021 Jan;11(1):143-155.
- Eur J Med Chem. 2020 Dec 15;208:112754.
- Eur J Pharmacol. 2021 Sep 21;174522.
- Fitoterapia. 2021 May 10;104922.
- Biochem Biophys Res Commun. 2018 Sep 3;503(1):297-303.

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REFERENCES

[1]. Liuhua Pei, et al. Cynaroside prevents macrophage polarization into pro-inflammatory phenotype and alleviates cecal ligation and puncture-induced liver injury by targeting PKM2/HIF-1α axis. Fitoterapia. 2021 Jul;152:104922.

[2]. Xiao Sun, et al. Protective effects of cynaroside against H_2O_2-induced apoptosis in H9c2 cardiomyoblasts. J Cell Biochem. 2011 Aug;112(8):2019-29.

[3]. Shams Tabrez, et al. Cynaroside inhibits Leishmania donovani UDP-galactopyranose mutase and induces reactive oxygen species to exert antileishmanial response. Biosci Rep. 2021 Jan 29;41(1):BSR20203857.

[4]. Václav Zima, et al. Unraveling the Anti-Influenza Effect of Flavonoids: Experimental Validation of Luteolin and its Congeners as Potent Influenza Endonuclease Inhibitors. Eur J Med Chem. 22 August 2020, 112754.

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