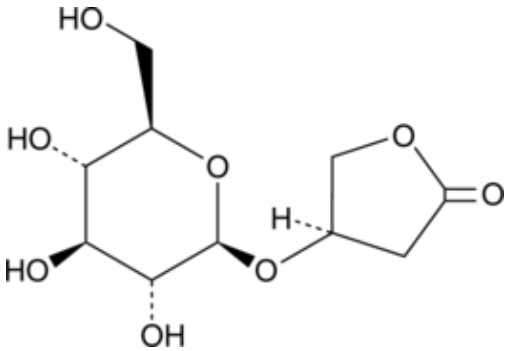
Product Data Sheet

Product Name: Kinsenoside
Cat. No.: GC44006

Chemical Properties

Cas. No.	151870-74-5		
SMILES	OC[C@H]1O[C@@H](O[C@]2([H])CC(OC2)=O)[C@H](O)[C@@H](O)[C@@H]1O		
Formula	C10H16O8	M.Wt	264.2
Solubility	DMF: 14 mg/ml,DMSO: 16 mg/ml,PBS (pH 7.2): 10 mg/ml	Storage	Store at -20°C,protect from light
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Protocol

Cell experiment [1]:

Cell lines	MDA-MB-231 and MDA-MB-468 (triple-negative breast cancer cells), and MCF-10A (normal breast epithelial cells)

Caution: Product has not been fully validated for medical applications. For research use only.
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Preparation Method	MDA-MB-231 and MDA-MB-468 cells were cultured in DMEM medium supplemented with 10% FBS. MCF-10A cells were cultured in MCF-10A specialized medium with 10% FBS. Cell cultures were provided with a 1% penicillin/streptomycin solution and maintained at 37 °C under a 5% CO2 humidified environment. Cells were treated with Kinsenoside.
Reaction Conditions	10-100μM; 2 days or 14 days
Applications	Kinsenoside significantly inhibited cell viability and colony formation in TNBC cells. Kinsenoside reduced lipid droplet formation, decreased triglyceride and total cholesterol accumulation, and increased polyunsaturated fatty acids levels. Kinsenoside induced ferroptosis, as evidenced by reduced glutathione levels and GPX4、SLC7A11 protein expression, and increased iron accumulation, lipid reactive oxygen species levels, and ACSL4 protein expression.

Animal experiment [2]:

Animal models	Male 6-week-old C57BL/6J mice
Preparation Method	Mice received intraperitoneal injection of 10% carbon tetrachloride (CCl_4) (dosage: 2mL/kg) two times a week for 8 weeks to induce liver fibrosis. Mice were treated by oral gavage with Kinsenoside (10, 20, 30mg/kg) once a day for 8 weeks.
Dosage form	10, 20, 30mg/kg; oral gavage; once daily for 8 weeks

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Applications	Kinsenoside markedly diminished the extent of liver fibrosis with substantial lymphocyte infiltration and collagen deposition. Kinsenoside lowered serum ALT and AST levels and liver index. Kinsenoside lowered the production of pro-inflammatory cytokines like IL-2, IFN-γ, TNF-α, and IL-12, and raised the secretion of anti-inflammatory cytokine IL-10. Kinsenoside reduced NO release. Kinsenoside suppressed expression or release of fibrosis-related proteins, including α-SMA, TGF-β1, Col-I, and TIMP-1 and TIMP-2, but augmented the mRNA and protein level of MMP-13.

References:
[1] Yang Y, Chen D, Zhu Y, et al. Kinsenoside Suppresses DGAT1-Mediated Lipid Droplet Formation to Trigger Ferroptosis in Triple-Negative Breast Cancer. Int J Mol Sci. 2025 Mar 5;26(5):2322.
[2] Xiang M, Liu T, Tian C, et al. Kinsenoside attenuates liver fibro-inflammation by suppressing dendritic cells via the PI3K-AKT-FoxO1 pathway. Pharmacol Res. 2022 Mar;177:106092.

Background

Kinsenoside is a bioactive glycoside extracted from *Anoectochilus roxburghii*. Kinsenoside activates the Nrf2 pathway, inhibits the NF-κB signaling pathway, and modulates the IL-10/STAT3/SOCS3 axis. Kinsenoside can be used in research related to osteoarthritis, diabetic vascular complications, gouty arthritis, and chronic pain[1-4].

In vitro, RAW264.7 macrophages were pretreated with Kinsenoside (3.125–50μg/mL) for 24 hours, followed by stimulation with lipopolysaccharide plus interferon-γ for 24 hours. Kinsenoside significantly inhibited the expression of pro-inflammatory factors (interleukin-6, interleukin-1β, tumor necrosis factor-α, interleukin-12, inducible nitric oxide synthase) and promoted macrophage repolarization from the M1 to the M2 phenotype. Primary mouse chondrocytes were pretreated with Kinsenoside (6.25–25μg/mL) for 24 hours, followed by stimulation with interleukin-1β (10ng/mL) for 24 hours. Kinsenoside significantly inhibited chondrocyte apoptosis and reduced the inflammatory response[5]. Triple-negative breast cancer MDA-MB-231 and MDA-MB-468 cells were treated with Kinsenoside (10–100μM) for 2 days or 14 days. Kinsenoside significantly inhibited cell viability and reduced colony formation. Kinsenoside significantly suppressed lipid droplet formation, decreased

triglyceride and total cholesterol accumulation, increased polyunsaturated fatty acid levels, and markedly induced ferroptosis[6].

In vivo, C57BL/6J mice were administered Kinsenoside (10, 20, 30mg/kg; once daily) by oral gavage while receiving CCl_4 (2mL/kg; twice a week) for 8 weeks. Kinsenoside significantly alleviated hepatic histopathological damage, pro-inflammatory cytokine release, and extracellular matrix deposition[7]. C57BL/6J mice were administered Kinsenoside (20, 40mg/kg; once daily; for 9 consecutive weeks). Four weeks after Kinsenoside treatment began, alcoholic liver injury was induced by an ethanol-containing liquid diet (4% ethanol) plus 5% CCl_4 (2mL/kg; twice a week; for 5 consecutive weeks). Kinsenoside significantly alleviated hepatic histopathological damage, inflammatory cell infiltration, and collagen fiber deposition, while reducing serum alanine aminotransferase, aspartate aminotransferase, and triglyceride levels[8].

References:
[1] Deng YF, Xu QQ, Chen TQ, et al. Kinsenoside alleviates inflammation and fibrosis in experimental NASH mice by suppressing the NF-κB/NLRP3 signaling pathway. Phytomedicine. 2022 Sep;104:154241.
[2] Lu L, Liao J, Xu C, et al. Kinsenoside-Loaded Microneedle Accelerates Diabetic Wound Healing by Reprogramming Macrophage Metabolism via Inhibiting IRE1α/XBP1 Signaling Axis. Adv Sci (Weinh). 2025 Jul;12(26):e2502293.
[3] Qi CX, Zhou Q, Yuan Z, et al. Kinsenoside: A Promising Bioactive Compound from Anoectochilus Species. Curr Med Sci. 2018 Feb;38(1):11-18.
[4] Wang W, Ding Y, Yu C, et al. Kinsenoside attenuates ER stress and inhibits inflammatory responses through IL-10/STAT/SOCS3 pathway in chronic pain relief. Neuropharmacology. 2025 Aug 1;273:110463.
[5] Zhou F, Mei J, Han X, et al. Kinsenoside attenuates osteoarthritis by repolarizing macrophages through inactivating NF-κB/MAPK signaling and protecting chondrocytes. Acta Pharm Sin B. 2019 Sep;9(5):973-985.
[6] Yang Y, Chen D, Zhu Y, et al. Kinsenoside Suppresses DGAT1-Mediated Lipid Droplet Formation to Trigger Ferroptosis in Triple-Negative Breast Cancer. Int J Mol Sci. 2025 Mar 5;26(5):2322.
[7] Xiang M, Liu T, Tian C, et al. Kinsenoside attenuates liver fibro-inflammation by suppressing dendritic cells via the PI3K-AKT-FoxO1 pathway. Pharmacol Res. 2022 Mar;177:106092.
[8] Gao L, Chen X, Fu Z, et al. Kinsenoside Alleviates Alcoholic Liver Injury by Reducing Oxidative Stress, Inhibiting Endoplasmic Reticulum Stress, and Regulating AMPK-Dependent Autophagy. Front

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Pharmacol. 2022 Jan 18;12:747325.