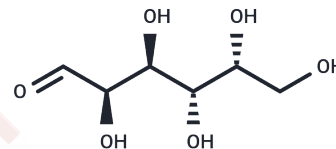


D-Galactose

Chemical Properties

CAS No. :	59-23-4
Formula:	C ₆ H ₁₂ O ₆
Molecular Weight:	180.16
Storage:	Powder: -20°C for 3 years In solvent: -80°C for 1 year Actual storage temperature shall be subject to the COA.



Biological Description

Description	D-Galactose is a naturally occurring hexose and a C-4 epimer of glucose. It can combine with glucose to form lactose and is commonly used to establish animal models of aging.
Targets(IC50)	Endogenous Metabolite
In vitro	Galactose is important for the survival and virulence of bacteria. Galactose is utilized by the Leloir pathway in Escherichia coli. Two anomers of d-galactose are used for different purposes, α -d-galactose as a carbon source and β -d-galactose for induction of UDP-galactose synthesis for biosynthetic glycosylation[1].
In vivo	Chronic D-galactose exposure induces neurodegeneration by enhancing caspase-mediated apoptosis and inhibiting neurogenesis and neuron migration in mice, as well as increasing oxidative damage. Moreover, D-galactose-induced toxicity in mice is a useful model for studying the mechanisms of neurodegeneration and neuroprotective drugs and agents[2]. D-galactose given by oral route leads to cognitive impairments in rats which are accompanied by oxidative damage. Cognitive impairments is observed in the open-field test in the 4th and 6th weeks after d-gal administration, as well as an impairment in spatial memory in the radial maze test after the 6th week of d-gal administration[3].

Solubility Information

Solubility	H ₂ O: 66 mg/mL (366.34 mM),Sonication is recommended. DMSO: 86.6 mg/mL (480.68 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 3.3 mg/mL (18.32 mM),Sonication is recommended. <i>Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.</i>

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.5506 mL	27.7531 mL	55.5062 mL
5 mM	1.1101 mL	5.5506 mL	11.1012 mL
10 mM	0.5551 mL	2.7753 mL	5.5506 mL
50 mM	0.111 mL	0.5551 mL	1.1101 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

- Hou J, et al. D-galactose induces astrocytic aging and contributes to astrocytoma progression and chemoresistance via cellular senescence. *Mol Med Rep.* 2019 Nov;20(5):4111-4118.
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- Zhang H, Cai J, Li C, et al. Wogonin inhibits latent HIV-1 reactivation by downregulating histone crotonylation. *Phytomedicine.* 2023: 154855.
- Xu X, et al. D-galactose induces senescence of glioblastoma cells through YAP-CDK6 pathway. *Aging (Albany NY).* 2020 Sep 29;12(18):18501-18521.
- Wei H, et al. Behavioural study of the D-galactose induced aging model in C57BL/6J mice. *Behav Brain Res.* 2005 Feb 28;157(2):245-51.

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