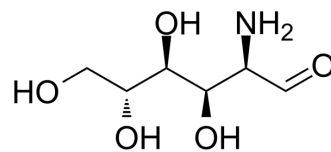


## Glucosamine

<b>Cat. No.:</b>	HY-B1125		
<b>CAS No.:</b>	3416-24-8		
<b>Molecular Formula:</b>	C <sub>6</sub> H <sub>13</sub> NO <sub>5</sub>		
<b>Molecular Weight:</b>	179.17		
<b>Target:</b>	Endogenous Metabolite; Reactive Oxygen Species; Autophagy; HIF/HIF Prolyl-Hydroxylase		
<b>Pathway:</b>	Metabolic Enzyme/Protease; Immunology/Inflammation; NF-κB; Autophagy		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



### SOLVENT & SOLUBILITY

#### In Vitro

H<sub>2</sub>O : 100 mg/mL (558.13 mM; ultrasonic and warming and heat to 60°C)  
 DMSO : 3.33 mg/mL (18.59 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	5.5813 mL	27.9065 mL	55.8129 mL
	5 mM	1.1163 mL	5.5813 mL	11.1626 mL
	10 mM	0.5581 mL	2.7906 mL	5.5813 mL

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

#### In Vivo

1. Add each solvent one by one: PBS  
 Solubility: 50 mg/mL (279.06 mM); Clear solution; Need ultrasonic

### BIOLOGICAL ACTIVITY

#### Description

Glucosamine (D-Glucosamine) is an amino sugar and a prominent precursor in the biochemical synthesis of glycosylated proteins and lipids, is used as a dietary supplement. Glucosamine also is a natural constituent of glycosaminoglycans in the cartilage matrix and synovial fluid, which when administered exogenously, exerts pharmacological effects on osteoarthritic cartilage and chondrocytes<sup>[1]</sup>.

#### IC<sub>50</sub> & Target

Human Endogenous Metabolite

#### In Vitro

Glucosamine (D-Glucosamine) exhibits dose-dependent DPPH antioxidant activity<sup>[2]</sup>.  
 Glucosamine treatment of Short-term (4 h) inhibits HIF-1α at the protein level, decreases phosphorylation of p70S6K and S6, translation-related proteins<sup>[3]</sup>.

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Glucosamine significantly decreases renal expression of  $\alpha$ -smooth muscle actin, collagen I, and fibronectin in the obstructed kidneys and TGF- $\beta$ 1-treated renal cells<sup>[4]</sup>.

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

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## CUSTOMER VALIDATION

- Microbiome. 2019 Mar 20;7(1):43.
- Theranostics. 2021 Mar 24;11(12):5650-5674.
- Laurea Magistrale in Biomedical Engineering, Politecnico di Milano. 2019 Jun.

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## REFERENCES

- [1]. Bruyère O, et al. Efficacy and safety of glucosamine sulfate in the management of osteoarthritis: Evidence from real-life setting trials and surveys. *Semin Arthritis Rheum*. 2016 Feb;45(4 Suppl):S12-7.
- [2]. Jamialahmadi K, et al. Protective effects of glucosamine hydrochloride against free radical-induced erythrocytes damage. *Environ Toxicol Pharmacol*. 2014 Jul;38(1):212-9.
- [3]. Jo JR, et al. Short-term treatment with glucosamine hydrochloride specifically downregulates hypoxia-inducible factor-1 $\alpha$  at the protein level in YD-8 human tongue cancer cells. *Int J Oncol*. 2014 May;44(5):1699-706.
- [4]. Park J, et al. Glucosamine hydrochloride exerts a protective effect against unilateral ureteral obstruction-induced renal fibrosis by attenuating TGF- $\beta$  signaling. *J Mol Med (Berl)*. 2013 Nov;91(11):1273-84.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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