# Glucosamine hydrochloride

**Cat. No.:** HY-N0733

**CAS No.:** 66-84-2

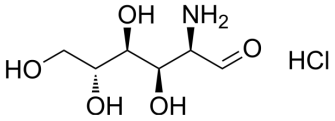
**Molecular Formula:** $C_6H_{14}ClNO_5$

**Molecular Weight:** 215.63

**Target:** HIF/HIF Prolyl-Hydroxylase; Autophagy; Reactive Oxygen Species; Endogenous Metabolite

**Pathway:** Metabolic Enzyme/Protease; Autophagy; Immunology/Inflammation; NF-κB

**Storage:** 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)




## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 100 mg/mL (463.76 mM; Need ultrasonic)
$H_2O$ : 50 mg/mL (231.88 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 4.6376 mL | 23.1879 mL | 46.3757 mL |
| | 5 mM | 0.9275 mL | 4.6376 mL | 9.2751 mL |
| | 10 mM | 0.4638 mL | 2.3188 mL | 4.6376 mL |

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

**In Vivo**

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (463.76 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (11.59 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (11.59 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (11.59 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

Glucosamine hydrochloride (D-Glucosamine hydrochloride) is an amino sugar and a prominent precursor in the biochemical synthesis of glycosylated proteins and lipids, is used as a dietary supplement. Glucosamine hydrochloride 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[1].

| | | |
|---|---|---|
| **$IC_{50}$ & Target** | Human Endogenous Metabolite | Microbial Metabolite |
| **In Vitro** | Glucosamine hydrochloride (D-Glucosamine hydrochloride) exhibits dose-dependent DPPH antioxidant activity[2].<br>Glucosamine hydrochloride treatment of Short-term (4 h) inhibits HIF-1α at the protein level, decreases phosphorylation of p70S6K and S6, translation-related proteins[3].<br>Glucosamine hydrochloride significantly decreases renal expression of α-smooth muscle actin, collagen I, and fibronectin in the obstructed kidneys and TGF-β1-treated renal cells[4].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. | |

## 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]. Jamialahmadi K, et al. Protective effects of glucosamine hydrochloride against free radical-induced erythrocytes damage. Environ Toxicol Pharmacol. 2014 Jul;38(1):212-9.

[2]. Jo JR, et al. Short-term treatment with glucosamine hydrochloride specifically downregulates hypoxia-inducible factor-1α at the protein level in YD-8 human tongue cancer cells. Int J Oncol. 2014 May;44(5):1699-706.

[3]. Park J, et al. Glucosamine hydrochloride exerts a protective effect against unilateral ureteral obstruction-induced renal fibrosis by attenuating TGF-β signaling. J Mol Med (Berl). 2013 Nov;91(11):1273-84.

[4]. 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.





Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA