# Product Data Sheet

Product Name: Kanosamine (hydrochloride)
Cat. No.: GC14432

## Chemical Properties

| | | | |
|---|---|---|---|
| Cas. No. | 57649-10-2 | | |
| Chemical Name | 3-amino-3-deoxy-D-glucose, monohydrochloride | | |
| SMILES | O=C([H])[C@H](O)[C@@H](N)[C@H](O)[C@H](O)CO.Cl | | |
| Formula | $C_6H_{13}NO_5$ • HCl | M.Wt | 215.6 |
| Solubility | ≤5mg/ml in ethanol;25mg/ml in DMSO;25mg/ml in dimethyl formamide | Storage | Store at -20°C |
| General tips | For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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 | Kanosamine (hydrochloride) | | |

## Protocol

**Cell experiment:**

MICs are determined by a serial dilution microtitrer plates method in Yeast Nitrogen Base medium containing 1% glucose or glycerol as a carbon source. Wells containing serially diluted kanosamine and control wells are inoculated with 105 cells /mL of an overnight culture of fungal cells and incubated for 24 h at 30°C. MIC is defined as the lowest antifungal agent concentration preventing visible growth. Alternatively, MICs are determined in RPMI 1640 medium buffered with 3-[N-morpholino]propanesulphonic acid (MOPS) to pH 7, under conditions recommended by NCCLS. In all cases, reproducible sharp end points are obtained and trailing effects are not observed[1].


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References:

[1]. Milner JL, et al. Production of kanosamine by Bacillus cereus UW85. Appl Environ Microbiol. 1996 Aug;62(8):3061-5.
[2]. Janiak AM, et al. Mechanism of antifungal action of kanosamine. Med Mycol. 2001 Oct;39(5):401-8.

## Background

Kanosamine is the antibiotic produced by Bacillus cereus UW85. Kanosamine showed highly inhibitory effects to the growth of plant-pathogenic oomycetes and moderately inhibitory effects to certain fungi and inhibited few bacterial species tested. Kanosamine accumulation in B. cereus UW85 culture supernatants was enhanced by the addition of ferric iron and suppressed by addition of phosphate to rich medium. Kanosamine accumulation was also enhanced more than 300% by the addition of alfalfa seedling exudate to minimal medium [1].

Kanosamine was also produced by a Streptomyces SP [2]. Kanosamine inhibited cell wall synthesis in plant-pathogenic oomycetes with MIC value of 25 μg/ml for P. medicaginis M2913 and certain fungi as well as some bacterial species with MIC value of 400 μg/ml

for S. aureus [1,2]. It has been explored as an alternative and/or supplement to synthetic pesticides and genetic resistance of crop plants for the management of plant disease [1,2].

The antibiotic kanosamine inhibited the growth of many human pathogenic fungi. Kanosamine was transported into cells by the glucose transport system and subsequently phosphorylated to generate kanosamine-6-phosphate. The product was an inhibitor of the enzyme glucosamine-6-phosphate synthase. The Inhibitory effect was competitive to one of the substrates, D-fructose-6-phosphate, with Ki value of 5.9 mM. The action of kanosamine on C. albicans cells lead to profound morphological changes, inhibition of septum formation and cell agglutination [3].

References:
[1] Milner J L, Silo-Suh L, Lee J C, et al. Production of kanosamine by Bacillus cereus UW85[J]. Applied and Environmental Microbiology, 1996, 62(8): 3061-3065.
[2] Dolak L A, Castle T M, Dietz A, et al. 3-Amino-3-deoxyglucose produced by a Streptomyces SP[J]. The Journal of antibiotics, 1980, 33(8): 900-901.
[3] Janiak A M, Milewski S. Mechanism of antifungal action of kanosamine[J]. Medical mycology, 2001, 39(5): 401-408.