

Product Data Sheet

Product Name: Guanethidine Sulfate

Cat. No.: GC15934

Chemical Properties

Cas. No. 645-43-2

Chemical Name 2-[2-(azocan-1-yl)ethyl]guanidine;sulfuric acid

SMILES C1CCCN(CCC1)CCN=C(N)N.C1CCCN(CCC1)CCN=C(N)N.OS(=O)(=O)O

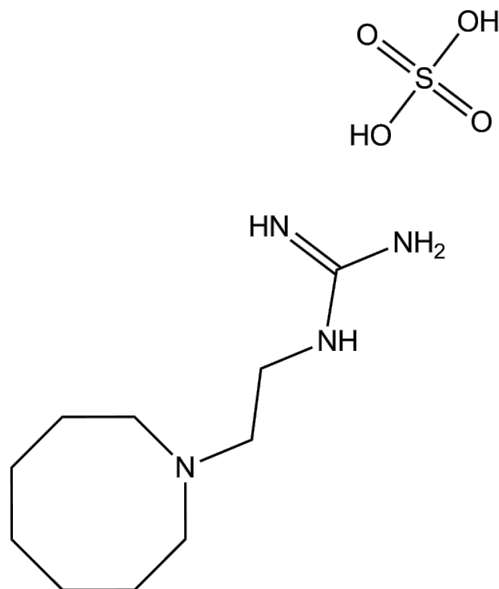
Formula $C_{10}H_{24}N_4O_4S$ M.Wt 296.39

Solubility $\geq 159.4\text{mg/mL}$ in Water Storage Store at -20°C

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]:

Caution: Product has not been fully validated for medical applications. For research use only.

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Product Data Sheet

Cell lines the electrically stimulated mouse vas deferens

Preparation method This compound is soluble in DMSO. General tips for obtaining a higher concentration: Please warm the tube at 37°C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Reacting condition 3 μ M

Applications In the electrically stimulated mouse vas deferens, Guanethidine sulfate inhibited twitching by 95% $\pm$ 3% in 15 min, but this effect was only partially reversed after 1 h of washing (33% $\pm$ 12% of control).

Animal experiment [1]:

Animal models Myocardial infarction (MI) rat model

Dosage form low-dose [LG], 1 mg/kg/day; medium-dose, 3 mg/kg/day; high-dose, 10 mg/kg/day; administered via an osmotic mini-pump for 4 weeks

Application In myocardial infarction (MI) rats, LG suppressed left ventricular (LV) dilation (9.2 $\pm$ 0.9 mm vs. 11.0 $\pm$ 0.8 mm) and improved LV fractional shortening (25.0 $\pm$ 4.5% vs. 16.4 $\pm$ 4.7%) in association with a reduction of plasma NE levels (520 $\pm$ 250 pg/ml vs. 1,000 $\pm$ 570 pg/ml). Low-dose guanethidine reduced 24-h (6%) and 28-day mortality (6%). High-dose guanethidine also reduced 24-h mortality (12%) but increased 28-day mortality (91%).

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Other notes Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

References:

[1]. Joyce PI1,Rizzi D,Caló G,Rowbotham DJ,Lambert DG. The effect of guanethidine and local anesthetics on the electrically stimulated mouse vas deferens. *Anesth Analg*.2002 Nov;95(5):1339-43, table of contents.

[2]. Igawa A1, Nozawa T, Fujii N, et al. Long-term treatment with low-dose, but not high-dose, guanethidine improves ventricular function and survival of rats with heart failure after myocardial infarction. *J Am Coll Cardiol*. 2003 Aug 6;42(3):541-8.

Background

Guanethidine Sulfate is an anti-hypertensive drug involved in reducing the release of catecholamines such as norepinephrine [1].

In vitro: Guanethidine (0.1 and 1 μ M) decreased S-I efflux but increased resting efflux in a concentration dependent manner[1].On the electrically stimulated mouse vas deferens, Guanethidine (3 μ M) treatment inhibited twitching by $95\% \pm 3\%$ in 15 min, but this effect was only partially reversed after 1 h of washing ($33\% \pm 12\%$ of control). When guanethidine were used in combination with prilocaine, a reversal of $80\% \pm 13\%$ (at 1 h) was observed. When co-incubated with guanethidine (3 μ M), the twitch was reduced to $24\% \pm 4\%$ of control and was reversed to $77\% \pm 7\%$ after 1 h. The reversal produced by the combination was significantly more intense ($P < 0.05$) when compared with guanethidine alone. Local anesthetics reduced the sympatholytic actions of guanethidine, and this could explain the variable efficacy of guanethidine in the treatment of complex regional pain syndrome [2].

References:

[1]. Fabiani ME1,Story DF. Inhibition of sympathetic noradrenergic transmission by guanabenz and guanethidine in rat isolated mesenteric artery: involvement of neuronal potassium channels.*Pharmacol Res*.1996 Mar;33(3):171-80.

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[2]. Joyce PI1, Rizzi D, Caló G, Rowbotham DJ, Lambert DG. The effect of guanethidine and local anesthetics on the electrically stimulated mouse vas deferens. *Anesth Analg*. 2002 Nov;95(5):1339-43, table of contents.

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