Sulfisoxazole
PRODUCT DATA SHEET

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Product Name:	Sulfisoxazole
Product Number:	S120
CAS Number:	127-69-5
Molecular Formula:	$C_{11}H_{13}N_3O_3S$
Molecular Weight:	267.30
Form:	Solid
Appearance:	Solid
Solubility:	soluble in DMSO. acetone. slightly soluble in alcohol
Source:	Synthetic
Storage Conditions:	2-8C
Description:	Sulfisoxazole is a bioactive small molecule and broad-spectrum sulfanilamide antibacterial agent with an oxazole substituent. It is an ETA selective endothelin receptor antagonist (ETAR antagonist). It is a synthetic analog of the natural compound para-aminobenzoic acid (PABA).
Mechanism of Action:	Sulfisoxazole competes with PABA for the bacterial dihydropteroate synthase, thus preventing incorporation of PABA into dihydrofolic acid, the precursor to folic acid. Folic acid is a coenzyme in the synthesis of purines and pyrimidines, leading to reduced cell growth and cell death. Unlike bacteria (and fungi/ plants) that synthesize their own folic acid, mammals do not, and thus are unaffected by PABA inhibitors.
Spectrum:	Broad-spectrum against a range of Gram-positive and Gram-negative bacteria including otitis media.
Microbiology Applications	Sulfisoxazole is commonly used in clinical in vitro microbiological antimicrobial susceptibility tests (Sensi-Disc, from BD) against Gram- positive and Gram-negative bacteria. Sulfisoxazole has IC50 of 0.6 uM for ETA receptor, and 22 uM for rETA receptor. Sulfisoxazole was used in a novel engineered E. coli 12-member reporter panel of bioluminescent reporter stains, constructed using a novel non-antibiotic selection system, to survey environmental residues. The selectivity marker was developed based on the requirement for tryptophan, and folic acid-free medium was employed (Melamed et al, 2012).

References:

Chan MF(1994) Identification of a new class of ETA selective endothelin antagonists by pharmacophore directed screening. Biochem Biophys. Res. Commun. 201(1):228-234. PMID 8198578 Kuo C, Wang S and Grayston JT (1977) Antimicrobial activity of several antibiotics and a sulfonamide against Chlamydia trachomatis organisms in cell culture. Antimicrob. Agents. Chemother. 12(1):80-83 Antimicrobial Agents and Chemotherapy Jul 1977, 12 (1) 80-83; DOI: 10.1128/AAC.12.1.80 Melamed S et al (2012) A bacterial reporter panel for the detection and classification of antibiotic substances.Microb Biotechnol. 5(4):536-548