3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Azaserine

Product Number **A 4142**
Storage Temperature -0 °C

Product Description
Molecular Formula: $C_5H_7N_3O_4$
Molecular Weight: 173.1
CAS Number: 115-02-6
pK_a: 8.55[1]
Melting Point: 146-162 °C (with decomposition)[1]
λ_{max}: 250.5 nm (pH 7)[1]
Extinction Coefficient: $E^{1\%}$ = 1230
(252 nm, 0.1 N NaOH)[1]
Synonym: L-serine diazoacetate(ester),
O-diazoacetyl-L-serine[1]

Azaserine is a diazo keto compound and antibiotic, originally observed in extracts of *Streptomyces*, that is a known inhibitor of purine ribonucleotide biosynthesis. It is a structural analog of glutamine, and competes with glutamine in binding to enzymes involved in purine biosynthesis. Azaserine inhibits enzymes in purine biosynthesis by covalently reacting with cysteine residues in the enzyme active sites, such as in formylglycinamide ribonucleotide amidotransferase and PRPP amidotransferase.[2]

Azaserine has been used in a study of H2-35 cells to investigate the regulation of sterol regulatory element-binding protein-1 (SREBP-1).[3] Azaserine has been shown to inhibit glutamine:fructose-6-phosphate amidotransferase (GFAT) in cultured porcine glomerular mesangial cells and to inhibit γ-glutamyl hydrolase in cultured human sarcoma HT-1080 cells.[4,5] The role of glutamine in the regulation of assimilatory nitrate reductase activity in soil has been probed using various inhibitors of glutamine metabolism, including azaserine.[6]

Azaserine can induce DNA damage via the formation of carboxymethylated bases and O^6-methylguanine. The cytotoxicity of azaserine in two Raji Burkitt's lymphoma cell lines has been studied.[7]

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions
This product is soluble in water (50 mg/ml), yielding a clear, colorless to yellow solution.

Storage/Stability
Aqueous solutions of this product are reported to be most stable at pH 8.[1]

References
1. The Merck Index, 12th ed., Entry# 932.
2. DNA Replication, 2nd ed., Kornberg, A., and Baker, T., W.H. Freeman and Co. (New York, NY: 1992), pp. 57-60, 440-442.
3. Hasty, A. H., et al., Sterol regulatory element-binding protein-1 is regulated by glucose at the transcriptional level. J. Biol. Chem., **275(40)**, 31069-31077 (2000).
4. Kolm-Litty, V., et al., High glucose-induced transforming growth factor beta1 production is mediated by the hexosamine pathway in porcine glomerular mesangial cells. J. Clin. Invest., **101(1)**, 160-169 (1998).
5. Waltham, M. C., et al., γ-Glutamyl hydrolase from human sarcoma HT-1080 cells: characterization and inhibition by glutamine antagonists. Mol. Pharmacol., **51(5)**, 825-832 (1997).

6. McCarty, G. W., and Bremner, J. M., Regulation of assimilatory nitrate reductase activity in soil by microbial assimilation of ammonium. Proc. Natl. Acad. Sci. USA, **89(2)**, 453-456 (1992).

7. O'Driscoll, M., et al., The cytotoxicity of DNA carboxymethylation and methylation by the model carboxymethylating agent azaserine in human cells. Carcinogenesis, **20(9)**, 1855-1862 (1999).

GCY/RXR 10/03