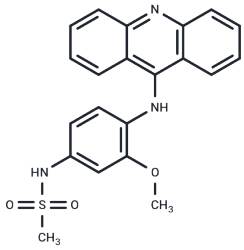
# Data Sheet (Cat.No.T1206)

TargetMol

## Amsacrine

### Chemical Properties



CAS No. : 51264-14-3

Formula: C21H19N3O3S

Molecular Weight: 393.46

Storage: Store at low temperature
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

### Biological Description

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| Description | Amsacrine (AMSA) (mAMSA) an antineoplastic agent which can intercalate into the DNA of tumor cells. Amsacrine also expresses topoisomerase inhibitor activity, specifically inhibiting topoisomerase II. |
| Targets(IC50) | Autophagy,Potassium Channel,Topoisomerase |
| In vitro | Amsacrine blocks HERG currents in HEK 293 cells and Xenopus oocytes in a concentration-dependent manner, with IC50 values of 209.4 nm and 2.0 μM, respectively. Amsacrine causes a negative shift in the voltage dependence of both activation ( 7.6 mV) and inactivation ( 7.6 mV). HERG current block by amsacrine is not frequency dependent[1]. In vitro studies of normal human lymphocytes with various concentrations of m-AMSA, show both increased levels of chromosomal aberrations, ranging from 8% to 100%, and increase SCEs, ranging from 1.5 times the normal at the lowest concentration studied (0.005 μg/mL) to 12 times the normal (0.25 μg/mL)[3]. Amsacrine-induced apoptosis of U937 cells is characterized by caspase-9 and caspase-3 activation, increased intracellular Ca2+ concentration, mitochondrial depolarization, and MCL1 down-regulation. Amsacrine induces MCL1 down-regulation by decreasing its stability. Further, amsacrine-treated U937 cells show AKT degradation and Ca2+-mediated ERK inactivation[4]. |
| In vivo | In animals treated with amsacrine (0.5-12 mg/kg), the frequencies of micronucleated polychromatic erythrocytes significantly increase at doses of 9 and 12 mg/kg. This study demonstrates for the first time that amsacrine exhibits high clastogenicity and low aneugenicity, while nocodazole exhibits high aneugenicity and low clastogenicity during mitotic phases in vivo[2]. |

### Solubility Information

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| Solubility | DMSO: 50 mg/mL (127.08 mM),Sonication is recommended.<br>(< 1 mg/ml refers to the product slightly soluble or insoluble) |
| In vivo Formulation | 10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (5.08 mM),Sonication is recommended.<br>*Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and* |

| | |
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| In vivo Formulation | *used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.* |

Preparing Stock Solutions

| | 1mg | 5mg | 10mg |
|---|---|---|---|
| 1 mM | 2.5416 mL | 12.7078 mL | 25.4155 mL |
| 5 mM | 0.5083 mL | 2.5416 mL | 5.0831 mL |
| 10 mM | 0.2542 mL | 1.2708 mL | 2.5416 mL |
| 50 mM | 0.0508 mL | 0.2542 mL | 0.5083 mL |

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Thomas D, et al. Inhibition of cardiac HERG currents by the DNA topoisomerase II inhibitor amsacrine: mode of action. Br J Pharmacol. 2004 Jun;142(3):485-94.
Fu W, Li X, Lu X, et al. A novel acridine derivative, LS-1-10 inhibits autophagic degradation and triggers apoptosis in colon cancer cells. Cell Death & Disease. 2017, 8(10): e3086-e3086
Attia SM. Molecular cytogenetic evaluation of the mechanism of genotoxic potential of amsacrine and nocodazole in mouse bone marrow cells. J Appl Toxicol. 2013 Jun;33(6):426-33.
Kao-Shan CS, et al. Cytogenetic effects of amsacrine on human lymphocytes in vivo and in vitro. Cancer Treat Rep. 1984 Jul-Aug;68(7-8):1989-97.
Lee YC, et al. Amsacrine-induced apoptosis of human leukemia U937 cells is mediated by the inhibition of AKT- and ERK-induced stabilization of MCL1. Apoptosis. 2016 Oct 19.
Fu, Wan, et al. A novel acridine derivative,. LS-1-10 inhibits autophagic degradation and triggers apoptosis in colon cancer cells [J]. Cell death & disease. 2017 Oct 5;8(10):e3086.