

Product Data Sheet

Product Name: KU 55933

Cat. No.: GC11118

Chemical Properties

Cas. No. 587871-26-9

Chemical Name 2-morpholin-4-yl-6-thianthren-1-ylpyran-4-one

SMILES C1COCCN1C2=CC(=O)C=C(O2)C3=C4C(=CC=C3)SC5=CC=CC=C5S4

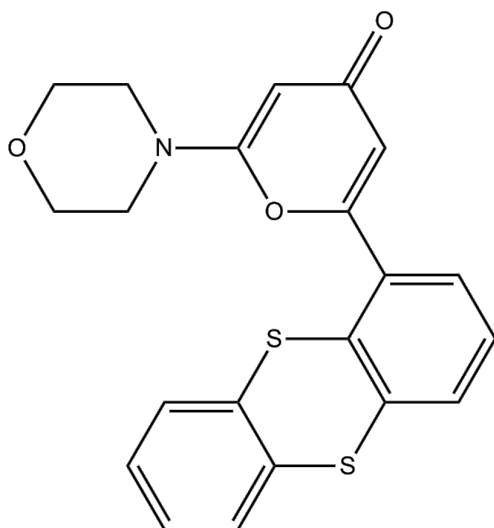
Formula $C_{21}H_{17}NO_3S_2$ M.Wt 395.49

Solubility $\geq 41.7\text{mg/mL}$ in DMSO with gentle warming Storage Desiccate 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]:

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Cell lines	Ishikawa and Hec-108 cells
Preparation Method	Ishikawa and Hec-108 cells were cultured to 30-50% confluence and then treated with Olaparib (50μM) alone or in combination with KU 55933 (10μM) for 24h. The cells were then harvested, washed with cold PBS and stained with PI and FITC-Annexin V. Apoptosis was detected by CytoFLEX and analyzed by CytExpert software.
Reaction Conditions	10μM; 24h
Applications	Inhibition of ATM with KU 55933 sensitizes endometrial cancer cell lines to Olaparib.

Animal experiment [2]:

Animal models	Six-week-old male ApoE ^{-/-} mice
Preparation Method	ApoE ^{-/-} mice fed a high-fat diet (HFD) were tail-vein injected with KU 55933 (8mg/kg) or vehicle (DMSO in saline) for 12 weeks. After the experiment, biochemical analysis was performed on the mouse plasma, and the mouse aorta and aortic roots were stained with Oil Red O and H&E.
Dosage form	8mg/kg; 12 weeks; i.v.
Applications	Administration of KU 55933 to apolipoprotein E-deficient mice inhibited Smad1/5 activation in endothelial cells (ECs) in atherosclerosis-susceptible regions, thereby suppressing endothelial cell proliferation and inflammation and attenuating atherosclerotic lesions in these mice.

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References:

- [1] Zhang JJ, Zhong JT, Wang WL, et al. Embelin improves alcoholic steatohepatitis in alcohol-associated liver disease via ATF6-mediated P2X7r-NLRP3 signaling pathway. *Phytomedicine*. 2025 May;140:156638.
- [2] Wei SY, Fu WS, Liu CH, et al. Identification of KU-55933 as an anti-atherosclerosis compound by using a hemodynamic-based high-throughput drug screening platform. *Proc Natl Acad Sci U S A*. 2024 Jan 30;121(5):e2318718121.

Background

KU 55933 is a potent and specific ATM kinase inhibitor that sensitizes human tumor cells to ionizing radiation and chemotherapeutic agents^[1]. KU 55933 has an IC₅₀ of 13nM and K_i of 2.2nM in vitro^[2].

In vitro, The ATM inhibitor KU 55933 (10μM; 1h) suppresses cell proliferation and induces apoptosis by blocking Akt in cancer cells with overactivated Akt^[3]. Inhibition of ATM with KU 55933 (10μM; 24h or 72h) sensitizes endometrial cancer cell lines to Olaparib^[4]. KU 55933 (0.01-20μM; 24h) is neuroprotective against the doxorubicin-induced cell damage in UN- and RA-SH-SY5Y cells^[5].

In vivo, Administration of KU 55933 (8mg/kg; 12 weeks; i.v.) to apolipoprotein E-deficient mice inhibited Smad1/5 activation in endothelial cells (ECs) in atherosclerosis-susceptible regions, thereby suppressing endothelial cell proliferation and inflammation and attenuating atherosclerotic lesions in these mice^[3]. KU 55933 (1mg/kg; 4 weeks; i.p.) treatment inhibits tumor growth and metastasis in mouse mammary tumors in vivo through the inhibition of GLUT1 translocation and vimentin expression^[6].

References:

- [1] Wei SY, Fu WS, Liu CH, et al. Identification of KU-55933 as an anti-atherosclerosis compound by using a hemodynamic-based high-throughput drug screening platform. *Proc Natl Acad Sci U S A*. 2024 Jan 30;121(5):e2318718121.
- [2] Golding SE, Rosenberg E, Valerie N, et al. Improved ATM kinase inhibitor KU-60019 radiosensitizes glioma cells, compromises insulin, AKT and ERK prosurvival signaling, and inhibits

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migration and invasion. Mol Cancer Ther. 2009 Oct;8(10):2894-902.

[3] Zhang A, Zhang L, Xie X, et al. Inhibition of ATM with KU-55933 Sensitizes Endometrial Cancer Cell Lines to Olaparib. Onco Targets Ther. 2023 Dec 19;16:1061-1071.

[4] Chwastek J, Jantas D, Lasoń W. The ATM kinase inhibitor KU-55933 provides neuroprotection against hydrogen peroxide-induced cell damage via a γ H2AX/p-p53/caspase-3-independent mechanism: Inhibition of calpain and cathepsin D. Int J Biochem Cell Biol. 2017 Jun;87:38-53.

[5] Li Y, Yang DQ. The ATM inhibitor KU-55933 suppresses cell proliferation and induces apoptosis by blocking Akt in cancer cells with overactivated Akt. Mol Cancer Ther. 2010 Jan;9(1):113-25.

[6] Harris BRE, Zhang Y, Tao J, et al. ATM inhibitor KU-55933 induces apoptosis and inhibits motility by blocking GLUT1-mediated glucose uptake in aggressive cancer cells with sustained activation of Akt. FASEB J. 2021 Apr;35(4):e21264.

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