

Product Data Sheet

Product Name: Mirin
Cat. No.: GC13491

Chemical Properties

Cas. No. 1198097-97-0

Chemical Name (Z)-5-(4-hydroxybenzylidene)-2-imino-2,5-dihydrothiazol-4-ol

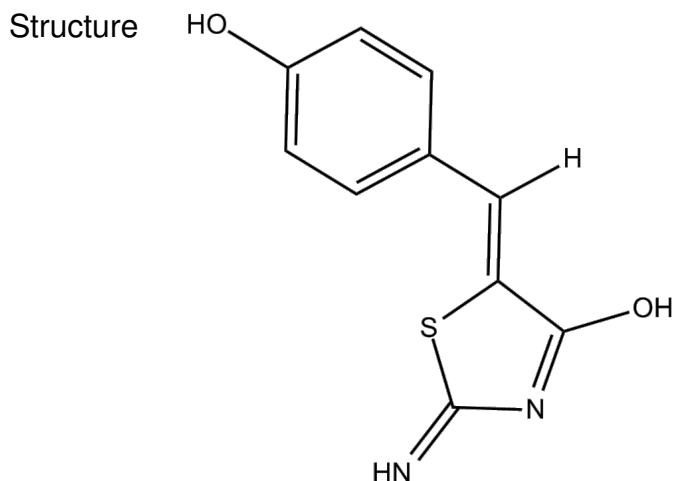
SMILES N=C1N=C(O)/C(S1)=C([H])/C2=CC=C(O)C=C2

Formula $C_{10}H_8N_2O_2S$ M.Wt 220.25

Solubility $\geq 9.3\text{mg/mL}$ in DMSO 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.



Protocol

Cell experiment [1]:

Cell lines W12E cells

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Preparation Method W12E cells were pre-treated with 100μM Mirin or 0.1% DMSO for 24h. Media was removed and fresh media containing the indicated doses of N-methylpyrrole-imidazole hairpin polyamide (PA25) or 0.1% DMSO was added, and cells incubated an additional 24h.

Reaction Conditions 100μM, 24 hours

Applications Mirin significantly sensitized human papillomavirus (HPV) episomes to PA25.

Animal experiment [2]:

Animal models Neuroblastoma mouse model

Preparation Method 1. Mirin encapsulation in biocompatible polymeric nanocarriers: 250mg PLGA-b-PEG-COOH (10kDa, 0.025mmol) and 50mg of Mirin (0.23mmol) were dissolved in 25mL of DMSO. The organic phase was mixed to 250mL of ultrapure water under vigorous stirring for 30min, maintaining water/organic ratio 10/1 with a constant removal of the resulting solution. The mixture was subsequently purified and concentrated using centrifugal filter devices to a final volume of 20mL, passed through a filter Sterivex™-GP 0.22μm of polyether sulfone and stored at 4°C. The same procedure was exploited to obtain empty nanoparticles.

2. Mice were randomized and injected daily with Mirin (50mg/kg/d) or vehicle (empty nanoparticles), totally 9 days according to the indicated schedule (arrowheads).

Dosage form 50mg/kg/d, 9 days, intratumoral injection

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Applications Mirin efficiently restrains tumor growth in vivo by inducing DNA damage response (DDR) and apoptosis.

Background

Mirin is an inhibitor of Mre11-Rad50-Nbs1 (MRN) complex ($IC_{50}=12\mu M$), which can inhibit the activity of MRE11-related exonuclease, and can inhibit the activation of MRN-dependent ATM^[1]. It is commonly used in the study of cancers related to DNA repair mechanisms^[1].

Mirin (100 μM , 24 hours) significantly enhanced the sensitivity of human papillomavirus (HPV) to N-methylpyrrole-imidazole hairpin polyamide (PA25)^[2]. Mirin (50 μM , 24h) significantly enhanced DNA double-strand breaks and promoted cell apoptosis in esophageal squamous cell carcinoma (ESCC) cells treated with NU7441 and ionizing radiation treatment^[3].

Mirin (50mg/kg/day, 9 days, intratumoral injection) efficiently restrains tumor growth in Neuroblastoma mouse model by inducing DNA damage response (DDR) and apoptosis^[4]. Mirin (50mg/kg, 72 hours, i.p.) significantly increased tubular damage and serum markers of acute kidney injury (AKI) (creatinine and neutrophil gelatinase-associated lipocalin) in cisplatin-induced nephrotoxic AKI mouse model^[5].

References:

- [1] Dupré A, Boyer-Chatenet L, Sattler RM, et al. A forward chemical genetic screen reveals an inhibitor of the Mre11–Rad50–Nbs1 complex. *Nature chemical biology*. 2008 Feb;4(2):119-25.
- [2] Edwards TG, Vidmar TJ, Koeller K, et al. DNA damage repair genes controlling human papillomavirus (HPV) episome levels under conditions of stability and extreme instability. *PloS one*. 2013 Oct 2;8(10):e75406.
- [3] Wang G, Guo S, Zhang W, et al. A comprehensive analysis of alterations in DNA damage repair pathways reveals a potential way to enhance the radio-sensitivity of esophageal squamous cell cancer. *Frontiers in oncology*. 2020 Oct 16;10:575711.
- [4] Petroni M, Sardina F, Infante P, et al. MRE11 inhibition highlights a replication stress-dependent vulnerability of MYCN-driven tumors. *Cell death & disease*. 2018 Aug 30;9(9):895.
- [5] Hama T, Nagesh PK, Chowdhury P, et al. DNA damage is overcome by TRIP13 overexpression during cisplatin nephrotoxicity. *JCI insight*. 2021 Nov 11;6(22).

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA