

Product Data Sheet

Product Name: Quetiapine

Cat. No.: GC14167

Chemical Properties

Cas. No. 111974-69-7

Chemical Name 2-[2-(4-benzo[b][1,4]benzothiazepin-6-yl)piperazin-1-yl]ethoxy]ethanol

SMILES C1CN(CCN1CCOCCO)C2=NC3=CC=CC=C3SC4=CC=CC=C42

Formula $C_{21}H_{25}N_3O_2S$ M.Wt 383.51

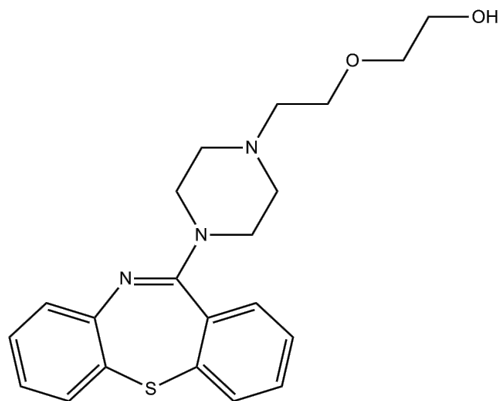
Solubility 100mg/mL in DMSO (ultrasonic and warming and heat to 45°C), ≥ 29.55 mg/mL in EtOH with gentle warming

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.

Structure



Protocol

Cell experiment [1]:

Cell lines Human skin keratinocytes cell

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

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Human skin keratinocytes, HaCaT, were cultured in DMEM supplemented with 10% heat-inactivated fetal bovine serum at 37°C in 5% CO₂. The cells were incubated with or without Quetiapine for 12h prior to UVB irradiation. Then, the cells were washed with phosphate buffered saline (PBS; pH7.4) and irradiated using a UVB lamps. The irradiation intensity was monitored by a UVB radiometer. Immediately after UVB irradiation, the cells were returned to the incubator and incubated with drug-free medium for 24h.

Preparation Method

Reaction Conditions 10, 20, 50µg/mL; 12h

Applications The Quetiapine-treated group had significantly lower levels of MDA and significantly higher activities of SOD and GSH-Px compared to the UVB and PBS groups.

Animal experiment [2]:

Animal models UVB Irradiation Model

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Quetiapine was dissolved in Dimethyl sulfoxide (DMSO) and diluted in phosphate-buffered salt solution (PBS). the working concentration of Quetiapine was the minimum maintenance dose (400mg/mL) used in clinics. Mice were randomly divided into 4 groups that represented treatments or controls. These were: normal healthy controls (no UVB or treatment), UVB irradiation alone (no treatment), UVB irradiation following a sham phosphate buffered saline (PBS) Preparation Method treatment (PBS group), and UVB following Quetiapine treatment (Quetiapine group). Each of these 4 groups was sub-divided randomly into 4 subgroups, which represented various time points to be investigated. Before experimentation, mice were anesthetized by intraperitoneal injection of 1% sodium pentobarbital and hair was removed from the back skin of mice using hair removal wax. Mice were placed 10cm below the lamps, the back skin of mice was collected at 0, 6, 12 and 24h.

Dosage form 400mg/mL; surface application; 0, 6, 12 and 24h

Applications Quetiapine treatment was able to significantly decrease skin thickness, erythema, and edema, as well as inflammation. Quetiapine treatment increased the activities of antioxidant enzymes, including superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px). In addition, it reduced the production of malondialdehyde (MDA), a kind of oxidized lipid.

References:

[1]. Xu P, Zhang M, Wang X, et al. Antioxidative effect of Quetiapine on acute ultraviolet-B-induced skin and HaCaT cell damage[J]. International Journal of Molecular Sciences, 2018, 19(4): 953.

Background

Quetiapine is a 5-HT receptors agonist with a pEC₅₀ of 4.77 for human 5-HT_{1A} receptor. Quetiapine is a dopamine receptor antagonist with a pIC₅₀ of 6.33 for human D₂ receptor. Quetiapine is an atypical antipsychotic used to treat schizophrenia, bipolar disorder, and major depressive disorder^[1].

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Quetiapine (1, 10 μ M; 48h) causes cell cycle exit and promotes cell differentiation in primary oligodendrocyte cultures^[2]. Quetiapine (10, 20, 50 μ g/mL; 12h) treated had significantly lower levels of MDA and significantly higher activities of SOD and GSH-Px^[3]. Quetiapine (<100 μ M; 24h) has no significant effect on cell viabilities^[4].

Quetiapine (400 mg/mL; surface application; 0, 6, 12, 24h) treatment significantly reduced skin thickening, erythema and edema, and inflammation caused by UVB irritation. In addition, Quetiapine treatment increased the activity of antioxidant enzymes, including superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px), while reducing the production of the oxidised lipid malondialdehyde (MDA)^[3]. Quetiapine (10, 30, 100mg/kg; po; bid; 28d) elicited a statistically significant, dose-dependent decrease in METH-induced hyperlocomotion 0.5h after administration. There were Quetiapine-induced, dose-dependent decreases in locomotor activity at 8 and 12h^[4].

References:

- [1]. Cross A J, Widzowski D, Maciag C, et al. Quetiapine and its metabolite norQuetiapine: translation from in vitro pharmacology to in vivo efficacy in rodent models[J]. British journal of pharmacology, 2016, 173(1): 155-166.
- [2]. Mi G, Wang Y, Ye E, et al. The antipsychotic drug Quetiapine stimulates oligodendrocyte differentiation by modulating the cell cycle[J]. Neurochemistry International, 2018, 118: 242-251.
- [3]. Xu P, Zhang M, Wang X, et al. Antioxidative effect of Quetiapine on acute ultraviolet-B-induced skin and HaCaT cell damage[J]. International Journal of Molecular Sciences, 2018, 19(4): 953.
- [4] Kondo M A, Tajinda K, Colantuoni C, et al. Unique pharmacological actions of atypical neuroleptic Quetiapine: possible role in cell cycle/fate control[J]. Translational psychiatry, 2013, 3(4): e243-e243.

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