

Product Data Sheet

Product Name: Ciprofloxacin hydrochloride

Cat. No.: GC81873

Chemical Properties

Cas. No. 86483-48-9

Formula $C_{17}H_{18}FN_3O_3 \cdot xHCl$

M.Wt 367.8

Solubility

Storage Store at room temperature, keep dry and cool

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



Background

Ciprofloxacin hydrochloride (Bay-09867 hydrochloride) is an orally active, blood-brain barrier permeable fluoroquinolone antibacterial agent. Ciprofloxacin hydrochloride exerts bactericidal effects primarily by inhibiting topoisomerase II and IV. Ciprofloxacin hydrochloride inhibits the proliferation of human dental pulp stem cells and chondrocytes from young rats, and also activates the Akt signaling pathway and upregulates markers such as β -catenin and Nanog to maintain the morphological

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

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characteristics of stem cells. Ciprofloxacin hydrochloride induces significant neurotoxicity and tissue damage, including reducing serotonin and glutathione levels in the brain, inducing oxidative stress and depression-like behaviors, and causing articular cartilage damage. Ciprofloxacin hydrochloride can be applied to research related to infections of necrotic young permanent teeth and neurotoxicity [1] [2] [3] [4].

In Vivo, Ciprofloxacin (400-1200 mg/kg; i.g.; daily; 7 days) hydrochloride induces dose-dependent chondrotoxicity in juvenile rats, with severe cartilage lesions, reduced cartilage thickness, and increased serum and cartilage concentrations observed at 800 and 1200 mg/kg, while no significant cartilage damage occurs at 400 mg/kg^[2].

In Vitro, Ciprofloxacin (2.5-10 µg/mL; 24-72 h) hydrochloride preserves the stem cell-like spindle morphology of immortalized human dermal papilla cells, and concentrations of 5 and 10 µg/mL for 72 h significantly increase cell aggregation size and number^[1]. Ciprofloxacin (10 µg/mL; 72 h) hydrochloride preserves CD133 stem cell marker expression and prevents increased procollagen type I fibroblast marker expression in immortalized human dermal papilla cells^[1]. Ciprofloxacin (10 µg/mL; 24-72 h) hydrochloride prevents time-dependent loss of CD133, integrin β1, and ALDH1A1 stem cell markers and increases in procollagen type I fibroblast marker in immortalized human dermal papilla cells; concentrations of 2.5-10 µg/mL for 72 h modulate these markers in a dose-dependent manner^[1]. Ciprofloxacin (2.5-10 µg/mL; 72 h) hydrochloride activates the Akt/GSK3β/β-catenin pathway in immortalized human dermal papilla cells in vitro in a dose-dependent manner, increasing activated Akt, inactivated GSK3β, and β-catenin levels^[1]. Ciprofloxacin (2.5-10 µg/mL; 72 h) hydrochloride activates the Akt/GSK3β/β-catenin pathway and upregulates EMT transcription factors (ZEB1, Snail) in primary human dermal papilla cells in vitro in a dose-dependent manner^[1].

References:

- [1]. Kiratipaiboon C, et al. Ciprofloxacin Improves the Stemness of Human Dermal Papilla Cells. Stem Cells Int. 2016;2016:5831276.
- [2]. Li P, et al. In vivo and in vitro chondrotoxicity of ciprofloxacin in juvenile rats[J]. Acta Pharmacologica Sinica, 2004, 25: 1262-1266.
- [3]. Kamocki K, et al. Effects of ciprofloxacin-containing antimicrobial scaffolds on dental pulp stem cell viability-In vitro studies. Arch Oral Biol. 2015;60(8):1131-1137.

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[4]. Ilgin S, et al. Ciprofloxacin-induced neurotoxicity: evaluation of possible underlying mechanisms. Toxicol Mech Methods. 2015;25(5):374-381.

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