
Product Data Sheet

Product Name: Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride)

Cat. No.: GC33951

Chemical Properties

Cas. No. 112732-17-9

SMILES O=C(C1=CN(C2CC2)C3=C(C=C(F)C(N4CCN(CC)CC4)=C3)C1=O)O.[x HCl]Formula $C_{19}H_{22}FN_3O_3 \cdot xHCl$ M.Wt

Solubility Water : 5 mg/mL 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 Canine tendon cells

Preparation Method Canine tendon cells were seeded onto 96-well flat-bottomed microculture plates at a density of 1×10^4 cells/well in 200 μ l of DMEM medium. The cells were allowed to adhere to the plates and were treated with various concentrations of Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) (10, 50, 100, and 200 μ g/ml) for 4 days, and the cell proliferation was measured.

Reaction Conditions 10, 50, 100, and 200 μ g/ml; 4 days

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

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Applications Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) treatment significantly enhanced cell proliferation of canine tendon cells in a dose-dependent manner.

Animal experiment [2]:

Animal models Male C57Bl6/J mice

Preparation Method Male C57Bl6/J mice (11 weeks old) were housed in a room with controlled temperature (21-23°C), humidity (55-60%), and lighting (12h light/dark cycle) and were supplied with water. After anesthesia induction with isoflurane in a 1:2 mixture of oxygen/nitrous oxide, a ventral cervical midline incision was made, and a 12-mm silicon-coated nylon filament was introduced over the common carotid artery, further to the internal carotid artery, to occlude the origin of the middle cerebral artery. After an ischemia time of 60 minutes, the filament was removed for reperfusion. Body temperature was controlled throughout the procedure. Mice obtained Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) (10mg/kg; p.o.) after waking from reperfusion anesthesia (ca. 1 hour after the operation) via feeding needle every 12 hours over a period of 7 days. The bacterial burden of lung and survival were measured.

Dosage form 10mg/kg; every 12 hours for 7 days; p.o.

Applications Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) treatment alleviated the bacterial burden of the lung and improved survival in mice with MCAo.

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References:

- [1] Lim S, Hossain M A, Park J, et al. The effects of Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) on canine tendon cells and chondrocytes proliferation in vitro[J]. Veterinary research communications, 2008, 32(3): 243-253.
- [2] Hetze S, Engel O, Römer C, et al. Superiority of preventive antibiotic treatment compared with standard treatment of poststroke pneumonia in experimental stroke: a bench approach[J]. Journal of Cerebral Blood Flow & Metabolism, 2013, 33(6): 846-854.

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Background

Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) is a fluoroquinolone antibiotic with a broad antibacterial spectrum and high bactericidal activity against major pathogenic bacteria [1]. Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) binds to the DNA-topoisomerase complex at the cleavage–ligation site, leading to conformational changes in the enzyme and inhibiting DNA replication through inefficient DNA ligation [2]. Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) has been used to control bacterial infections of the mastitis, respiratory, and gastrointestinal tracts in cattle [3].

In vitro, Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) treatment (40µg/ml) for 72 hours significantly increased the γH2Ax level in Abrams cells and led to a significant decrease in cell viability [4]. Treatment with 200µg/ml Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) for 4 days induced the characteristic of DNA fragmentation and the condensation of apoptotic cell nuclei in canine tendon cells and chondrocytes [5]. Treatment with 200µg/ml Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) for 24 hours induced the release of lactate dehydrogenase (LDH) and an increase in reactive oxygen species (ROS) levels in L8824 cells, disrupting mitochondrial membrane potential and promoting cell death [6].

In vivo, Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) treatment via oral administration at a dose of 10mg/kg every 12 hours for 7 days significantly reduced lung inflammation in mice after cerebral middle artery occlusion (MCAo), increased the survival rate of mice, and prevented weight loss [7]. Oral administration of water containing 0.27mg/ml Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) daily for 2 weeks significantly alleviated the symptoms of contact sensitivity (CS) in mice, altered the composition of the intestinal flora, and promoted anti-inflammatory responses [8].

References:

- [1] Lopez-Cadenas C, Sierra-Vega M, Garcia-Vieitez J J, et al. Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride): pharmacokinetics and metabolism in domestic animal species[J]. *Current Drug Metabolism*, 2013, 14(10): 1042-1058.
- [2] Grabowski Ł, Gaffke L, Pierzynowska K, et al. Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride)—the ruthless killer of eukaryotic cells or the last hope in the fight against bacterial infections?[J]. *International journal of molecular sciences*, 2022, 23(7): 3648.

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- [3] Mitchell M A. Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride)[J]. Journal of Exotic Pet Medicine, 2006, 15(1): 66-69.
- [4] York D, Withers S S, Watson K D, et al. Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) enhances the effects of chemotherapy in canine osteosarcoma cells with mutant and wild-type p53[J]. Veterinary and comparative oncology, 2017, 15(3): 1087-1100.
- [5] Lim S, Hossain M A, Park J, et al. The effects of Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) on canine tendon cells and chondrocytes proliferation in vitro[J]. Veterinary research communications, 2008, 32(3): 243-253.
- [6] Liu B, Cui Y, Brown P B, et al. Cytotoxic effects and apoptosis induction of Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) in hepatic cell line of grass carp (Ctenopharyngodon idellus)[J]. Fish & Shellfish Immunology, 2015, 47(2): 639-644.
- [7] Hetze S, Engel O, Römer C, et al. Superiority of preventive antibiotic treatment compared with standard treatment of poststroke pneumonia in experimental stroke: a bed to bench approach[J]. Journal of Cerebral Blood Flow & Metabolism, 2013, 33(6): 846-854.
- [8] Strzępa A, Majewska-Szczepanik M, Lobo F M, et al. Broad spectrum antibiotic Enrofloxacin hydrochloride (BAY-Vp2674 hydrochloride) modulates contact sensitivity through gut microbiota in a murine model[J]. Journal of Allergy and Clinical Immunology, 2017, 140(1): 121-133. e3.

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