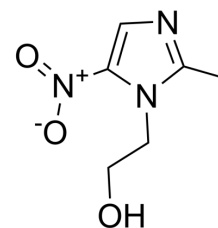


Metronidazole hydrochloride

| | |
|---------------------------|---|
| Cat. No.: | HY-B0318A |
| CAS No.: | 69198-10-3 |
| Molecular Formula: | C ₆ H ₁₀ ClN ₃ O ₃ |
| Molecular Weight: | 207.61 |
| Target: | Antibiotic; Bacterial; Parasite; Apoptosis |
| Pathway: | Anti-infection; Apoptosis |
| Storage: | Please store the product under the recommended conditions in the Certificate of Analysis. |



H-Cl

BIOLOGICAL ACTIVITY

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|--------------------|--|---------------|---|----------------|----------------------|------------------|----------------------------------|---------|---|
| Description | Metronidazole hydrochloride (SC 326421) is an orally active nitroimidazole antibiotic, can be used to research anaerobic infections. Metronidazole hydrochloride can cross blood brain barrier and results inflammation and skeletal muscle contraction under long-term application ^{[1][2][3][4]} . | | | | | | | | |
| In Vitro | <p>Metronidazole hydrochloride acts on anaerobic microorganism following: passage through the cell membrane; (b) reductive action; (c) interaction with intracellular targets; (d) release of inactive end products, exerts function with toxic nitro and nitroso derivatives^[1].</p> <p>Metronidazole hydrochloride displays inhibitory activity towards anaerobic protozoa <i>Trichomonas vaginalis</i>, <i>Entamoeba histolytica</i>, <i>Giardia lamblia</i>, and <i>Balantidium coli</i>^[1].</p> <p>Metronidazole hydrochloride (4-8 µg/mL) inhibits anaerobic bacteria and shows good bactericidal activity^[1].</p> <p>Metronidazole hydrochloride (0.1 µg/mL-0.01 mg/mL; 12-96 h) induces granular formation and triggers apoptosis in <i>Blastocystis sp</i>^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Apoptosis Analysis^[2]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>Blastocystis sp. Cells</td> </tr> <tr> <td>Concentration:</td> <td>0.1 µg/mL-0.01 mg/mL</td> </tr> <tr> <td>Incubation Time:</td> <td>12, 24, 48, 60, 72, 84, 96 hours</td> </tr> <tr> <td>Result:</td> <td>Decreased cell diameter, as a hallmark of an apoptotic cell, and resulted cell shrinkage.</td> </tr> </table> | Cell Line: | Blastocystis sp. Cells | Concentration: | 0.1 µg/mL-0.01 mg/mL | Incubation Time: | 12, 24, 48, 60, 72, 84, 96 hours | Result: | Decreased cell diameter, as a hallmark of an apoptotic cell, and resulted cell shrinkage. |
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| Concentration: | 0.1 µg/mL-0.01 mg/mL | | | | | | | | |
| Incubation Time: | 12, 24, 48, 60, 72, 84, 96 hours | | | | | | | | |
| Result: | Decreased cell diameter, as a hallmark of an apoptotic cell, and resulted cell shrinkage. | | | | | | | | |
| In Vivo | <p>Metronidazole hydrochloride (135 mg/kg/d; p.o.; 28 d) can cross the blood brain barrier, and exhibits neurotoxicity under long term administration in rats^[3].</p> <p>Metronidazole hydrochloride (1 g/L; p.o.; 4 weeks) results skeletal muscle atrophy and changes the expression of genes involved in the muscle peripheral circadian rhythm machinery and metabolic regulation^[4].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1"> <tr> <td>Animal Model:</td> <td>Sprague-Dawley (SD) rats (200-220 g)^[3]</td> </tr> <tr> <td>Dosage:</td> <td>135 mg/kg</td> </tr> </table> | Animal Model: | Sprague-Dawley (SD) rats (200-220 g) ^[3] | Dosage: | 135 mg/kg | | | | |
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| Dosage: | 135 mg/kg | | | | | | | | |

| | |
|-----------------|--|
| Administration: | Oral gavage; once daily; 28 days |
| Result: | Caused inflammatory markers increasing, including iNOS, eNOS, Bax and caspase 3 protein expressions increasing and caused oxidative stress damage in brain tissue, with MDA content rising. |
| Animal Model: | SPF C57Bl/6J mice (6-7 months old) ^[4] |
| Dosage: | 1 g/L (full dose) |
| Administration: | Oral gavage; provided with drinking water for 4 weeks, changed twice weekly |
| Result: | Resulted the muscle core clock and effector genes Cry2, Ror- β , E4BP4, PP AR γ and adiponectin expression increasing. Decreased hind limb muscle weight and resulted in smaller fibers in the tibialis anterior muscle. |

CUSTOMER VALIDATION

- Cell Metab. 2023 Sep 29;S1550-4131(23)00340-6.
- Microbiome. 2020 Aug 20;8(1):120.
- Emerg Microbes Infect. 2022 Feb 22;1-34.
- Water Res. 2023 May 21, 120110.
- Gut Microbes. 2023 Dec;15(2):2249143.

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- [1]. Scully BE. Metronidazole. Med Clin North Am. 1988 May;72(3):613-21.
- [2]. Dhurga DB, et al. Granular Formation during Apoptosis in Blastocystis sp. Exposed to Metronidazole (MTZ). PLoS One. 2016 Jul 29;11(7):e0155390.
- [3]. Chaturvedi S, et al. Mechanistic exploration of quercetin against metronidazole induced neurotoxicity in rats: Possible role of nitric oxide isoforms and inflammatory cytokines. Neurotoxicology. 2020 Jul;79:1-10.
- [4]. Manickam R, et al. Metronidazole Causes Skeletal Muscle Atrophy and Modulates Muscle Chronometabolism. Int J Mol Sci. 2018 Aug 16;19(8):2418.

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

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