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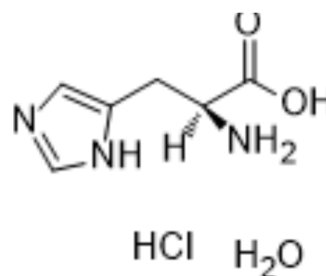
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## L-Histidine hydrochloride hydrate

|                    |                                                                      |
|--------------------|----------------------------------------------------------------------|
| Cat. No.:          | HY-W014423                                                           |
| CAS No.:           | 5934-29-2                                                            |
| Molecular Formula: | C <sub>6</sub> H <sub>12</sub> ClN <sub>3</sub> O <sub>3</sub>       |
| Molecular Weight:  | 209.63                                                               |
| Target:            | Endogenous Metabolite; Apoptosis; Reactive Oxygen Species            |
| Pathway:           | Metabolic Enzyme/Protease; Apoptosis; Immunology/Inflammation; NF-κB |
| Storage:           | Store at room temperature, keep dry and cool                         |
|                    | In solvent    -80°C    2 years                                       |
|                    | -20°C    1 year                                                      |



### SOLVENT & SOLUBILITY

|                                                                               |                                                                   |                                                       |           |           |            |            |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------|-----------|-----------|------------|------------|
| In Vitro                                                                      | H <sub>2</sub> O : 100 mg/mL (477.02 mM; Need ultrasonic)         |                                                       |           |           |            |            |
|                                                                               | DMSO : 1 mg/mL (4.77 mM; ultrasonic and warming and heat to 60°C) |                                                       |           |           |            |            |
|                                                                               | Preparing Stock Solutions                                         | <div><div>Solvent</div><div>Concentration</div></div> | Mass      | 1 mg      | 5 mg       | 10 mg      |
|                                                                               |                                                                   |                                                       |           |           |            |            |
|                                                                               |                                                                   | 1 mM                                                  |           | 4.7702 mL | 23.8512 mL | 47.7024 mL |
|                                                                               |                                                                   | 5 mM                                                  |           | 0.9540 mL | 4.7702 mL  | 9.5405 mL  |
|                                                                               | 10 mM                                                             |                                                       | 0.4770 mL | 2.3851 mL | 4.7702 mL  |            |
| Please refer to the solubility information to select the appropriate solvent. |                                                                   |                                                       |           |           |            |            |
| In Vivo                                                                       | 1. Add each solvent one by one: PBS                               |                                                       |           |           |            |            |
|                                                                               | Solubility: 50 mg/mL (238.51 mM); Clear solution; Need ultrasonic |                                                       |           |           |            |            |

### BIOLOGICAL ACTIVITY

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | L-Histidine hydrochloride hydrate (H-His-OH.HCl.H <sub>2</sub> O) is an endogenous metabolite. L-Histidine hydrochloride hydrate scavenges hydroxyl radicals and singlet oxygen, regulate the absorption of zinc, copper and iron, exhibits anti-inflammatory and antioxidant activities. L-Histidine hydrochloride hydrate is blood brain barrier penetrable <sup>[1][2][3]</sup> .                                                                                                                                                                                                                                           |
| In Vitro    | L-Histidine hydrochloride hydrate (1 mM, 20 h) enhances the cytotoxicity of H <sub>2</sub> O <sub>2</sub> , induces apoptosis by inducing DNA double-strand breaks <sup>[1]</sup> .<br>L-Histidine hydrochloride hydrate (0.2-10 mM, 20 h) reduces zinc-induced GT1-7 cell death (ED <sub>50</sub> =0.2 mM), downregulates the expression of zinc-induced ER stress-related genes (such as GADD45, GADD34 and p8) and calcium homeostasis-related genes (such as Arc) <sup>[2]</sup> .<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only.<br>Apoptosis Analysis <sup>[1]</sup> |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|         | Cell Line:                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | U937                                                                                 |
|         | Concentration:                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1 mM                                                                                 |
|         | Incubation Time:                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 20 h                                                                                 |
|         | Result:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Induced apoptosis.                                                                   |
| In Vivo | <p>L-Histidine hydrochloride hydrate (250 mg/kg, intra-rectal, 3 times a day for 5 days) exhibits anti-inflammatory efficacy in Acetic acid (HY-Y0319)-induced rats ulcerative colitis models<sup>[3]</sup>.</p> <p>L-Histidine hydrochloride hydrate (250 mg/kg, ip, single dose) exhibits neuroprotective efficacy in rat ischemia-reperfusion injury model<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> |                                                                                      |
|         | Animal Model:                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Rats ulcerative colitis models <sup>[3]</sup>                                        |
|         | Dosage:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 250 mg/kg                                                                            |
|         | Administration:                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | intra-rectal administration, 3 times a day for 5 days                                |
|         | Result:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Reduced the severity of colitis, reduced myeloperoxidase activity in colonic tissue. |
|         | Animal Model:                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Rat ischemia-reperfusion injury model <sup>[3]</sup>                                 |
|         | Dosage:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 250 mg/kg                                                                            |
|         | Administration:                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ip, single dose                                                                      |
|         | Result:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Reduced ischemia-induced neuronal death.                                             |
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      |

## CUSTOMER VALIDATION

- Cancer Cell. 2024 Aug 12;42(8):1386-1400.e8.
- Amino Acids. 2024 Sep 18;56(1):56.

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## REFERENCES

- [1]. Palomba L, et al., Low levels of hydrogen peroxide and L-histidine induce DNA double-strand breakage and apoptosis. Eur J Pharmacol. 1996 Dec 27;318(1):167-73.
- [2]. Kawahara M, et al., D-histidine and L-histidine attenuate zinc-induced neuronal death in GT1-7 cells. Metallomics. 2013 May;5(5):453-60.
- [3]. Wade A M, et al., Antioxidant characteristics of L-histidine[J]. The Journal of Nutritional Biochemistry, 1998, 9(6): 308-315.

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

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