

Product Data Sheet

Product Name: Serotonin HCl

Cat. No.: GC14843

Chemical Properties

Cas. No. 153-98-0

Chemical Name 3-(2-aminoethyl)-1H-indol-5-ol;hydrochloride

SMILES C1=CC2=C(C=C1O)C(=CN2)CCN.Cl

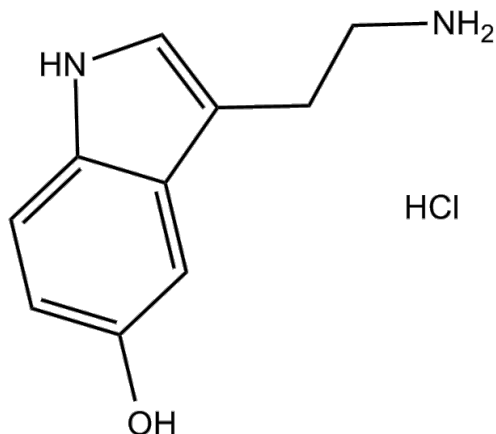
Formula $C_{10}H_{12}N_2O \cdot HCl$ M.Wt 212.68

Solubility DMF: 16 mg/ml, DMSO: 10 mg/ml, Ethanol: 1.2 mg/ml, PBS (pH 7.2): 5 mg/ml
Storage Store at 2-8°C, protect from light

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

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

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Cell experiment: For macrophage culture, peritoneal cavity cells are collected from WT and IL-13-/- mice with or without dextran sodium sulfate (DSS) treatment and cultured.

Cells are plated at a concentration of 3.0×10^6 cells per millilitre, and treated with either lipopolysaccharides (LPS); (100 ng/mL) or Serotonin hydrochloride (10-10 M) for 24 hours. The culture supernatant are collected and stored in -80°C until determination of cytokine levels using protein array system[2].

Animal experiment: Dextran sodium sulfate (DSS) colitis is induced by orally administering 5% DSS in drinking water for 5 days. In a separate experiment, IL-13-/- mice are injected subcutaneously with 100 mg/kg of Serotonin hydrochloride (5-HTP) twice daily for 8 days beginning 3 days prior to induction of DSS colitis; whereas, the control IL-13-/- mice receive saline as vehicle. Animals are anaesthetized prior to euthanization via cervical dislocation at the conclusion of each experiment or if they reach a predetermined end point (ie, loss of $\geq 20\%$ body weight and/or significant deterioration of body condition)[2].

References:

- [1]. Tsao D, et al. Serotonin-induced hypersensitivity via inhibition of catechol O-methyltransferase activity. Mol Pain. 2012 Apr 13;8:25.
[2]. Shajib MS, et al. Interleukin 13 and serotonin: linking the immune and endocrine systems in murine models of intestinal inflammation. PLoS One. 2013 Aug 28;8(8):e72774.

Background

Serotonin HCl a neurotransmitter, is a key messenger that mediates several central and peripheral functions in the human body^[1]. Serotonin HCl is also a catechol O-methyltransferase (COMT) inhibitor with a K_i of 44 μM ^[2].

In vitro, Serotonin HCl (1 nmol/L-10 micromol/L) caused vasoconstriction in a concentration-dependent manner^[3]. In vitro, 10 μM Serotonin HCl proliferates colon cancer cells through

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enhancing YAP (Yes-associated protein) expression^[1]. In vitro, for left lower lobe of lungs isolated from the dog, infusion of Serotonin HCl (100 micrograms/min) increased the pulmonary pre- and post-capillary resistances, but did not change the filtration coefficient^[4].

In vivo, topical Serotonin HCl (1-10 nmols) or the Serotonin HCl_{1/7} receptor agonist, 5-carboxamidotryptamine (10-30 nM), dilated third- and fourth-order arterioles, responses that were abolished by 1 μ M SB269970, a selective Serotonin HCl₇ receptor antagonist^[5].

References:

- [1] Yu H, et al. Serotonin acts through YAP to promote cell proliferation: mechanism and implication in colorectal cancer progression. *Cell Commun Signal*. 2023 Apr 12;21(1):75.
- [2] Tsao D, et al. Serotonin-induced hypersensitivity via inhibition of catechol O-methyltransferase activity. *Mol Pain*. 2012 Apr 13;8:25.
- [3] Tanaka N, et al. Both 5-hydroxytryptamine 5-HT_{2A} and 5-HT_{1B} receptors are involved in the vasoconstrictor response to 5-HT in the human isolated internal thoracic artery. *Clin Exp Pharmacol Physiol*. 2008 Jul;35(7):836-40.
- [4] Sumita T, et al. 5-Hydroxytryptamine receptor subtypes participating in pulmonary edema in dogs. *Eur J Pharmacol*. 1989 May 2;164(1):69-75.
- [5] Jackson WF, et al. 5-HT₇ receptors mediate dilation of rat cremaster muscle arterioles in vivo. *Microcirculation*. 2023 Aug;30(5-6):e12808.

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