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产品名称：盐酸丙咪嗪
产品别名：Imipramine hydrochloride

生物活性：

Description	Imipramine hydrochloride inhibits serotonin transporter with an IC50 value of 32 nM in vitro.
IC_{50} & Target	IC50: 32 nM (serotonin)[1]
In Vitro	Depression-like behavior is often complicated by chronic pain. Antidepressants including imipramine are widely used to treat chronic pain, but the mechanisms are not fully understood[2]. Imipramine (IC50=32 nM) and desipramine (IC50=160 nM) are found to be potent inhibitors of the human placental serotonin transporter[1].
In Vivo	Administration of imipramine reverses social avoidance behavior, significantly increasing the interaction time. 24 days of imipramine treatment in RSD mice significantly decreases stress-induced mRNA levels for IL-6 in brain microglia[3]. Chronic mild stress induces a long-term altered gene expression profile in the prefrontal cortex that is partially reverted by imipramine treatment (10mg/kg, i.p.)[4]. Chronic imipramine administration alteres the amino acid dynamics in the brain. In the striatum, the concentrations of asparagine, glutamine and methionine are significantly increased by chronic imipramine administration. In the thalamus and hypothalamus, chronic imipramine administration significantly decreased the valine concentration[5]. Imipramine reduces pain-related negative emotion without influencing pain and that this effect is diminished by denervation of 5-HT neurons and by anti-BDNF treatment. Imipramine also normalizes derangement of ERK/CREB coupling, which leads to induction of BDNF. This suggests a possible interaction between 5-HT and BDNF[2]. Imipramine treatment counteracts the corticosterone administration-induced increase in the reactivity of rat CA3 hippocampal circuitry to the activation of the 5-HT receptor[6].
Solvent&Solubility	***In Vitro:*** **H_2O : ≥ 34 mg/mL (107.30 mM)** * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.1559 mL	15.7793 mL	31.5587 mL
5 mM	0.6312 mL	3.1559 mL	6.3117 mL
10 mM	0.3156 mL	1.5779 mL	3.1559 mL

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

[1]. Balkovetz DF, et al. Evidence for an imipramine-sensitive serotonin transporter in human placental brush-border membranes. J Biol Chem. 1989 Feb 5;264(4):2195-8.

[2]. Yasuda S, et al. Imipramine ameliorates pain-related negative emotion via induction of brain-derived neurotrophic factor. Cell Mol Neurobiol. 2014 Nov;34(8):1199-208.

[3]. Ramirez K, et al. Imipramine attenuates neuroinflammatory signaling and reverses stress-induced

References	social avoidance. Brain Behav Immun. 2015 May;46:212-20. [4]. Erburu M, et al. Chronic mild stress and imipramine treatment elicit opposite changes in behavior and in gene expression in the mouse prefrontal cortex. Pharmacol BiochemBehav. 2015 Aug;135:227-36. [5]. Nagasawa M, et al. Chronic imipramine treatment differentially alters the brain and plasma amino acid metabolism in Wistar and Wistar Kyoto rats. Eur J Pharmacol. 2015 Sep 5;762:127-35. [6]. Tokarski K, et al. Imipramine counteracts corticosterone-induced alterations in the effects of the activation of 5-HT(7) receptors in rat hippocampus. J Physiol Pharmacol. 2009 Jun;60(2):83-8.

实验参考：

Animal Administration	Rats: The Wistar (WIS) and Wistar Kyoto (WKY) rats are divided into four groups: (1) a control WIS rat group, (2) an imipramine-treated WIS rat group, (3) a control WKY rat group and (4) an imipramine-treated WKY rat group. Distilled water (10 mL/kg) or imipramine solution (10 mg/10 mL/kg) is orally administered for 28 days except on the day of the open field test, when nothing is administered in order to avoid the acute effect of single administration on the open field test[5]. Mice: C57BL/6 mice subjected to repeated social defeat (RSD), home cage control (HCC) are randomLy selected into four groups: RSD/imipramine, RSD/vehicle, HCC/imipramine, and HCC/vehicle. Mice in the RSD/imipramine received daily intraperitoneal (i.p.) injections of imipramine (20 mg/kg) for 24 days after the 6 cycles of RSD. HCC/imipramine received daily i.p. imipramine at the same dose while RSD/vehicle and HCC/vehicle groups received i.p. injections of vehicle (sodium chloride, 0.9%) for 24 days at the same time point[3].
References	[1]. Balkovetz DF, et al. Evidence for an imipramine-sensitive serotonin transporter in human placental brush-border membranes. J Biol Chem. 1989 Feb 5;264(4):2195-8. [2]. Yasuda S, et al. Imipramine ameliorates pain-related negative emotion via induction of brain-derived neurotrophic factor. Cell Mol Neurobiol. 2014 Nov;34(8):1199-208. [3]. Ramirez K, et al. Imipramine attenuates neuroinflammatory signaling and reverses stress-induced social avoidance. Brain Behav Immun. 2015 May;46:212-20. [4]. Erburu M, et al. Chronic mild stress and imipramine treatment elicit opposite changes in behavior and in gene expression in the mouse prefrontal cortex. Pharmacol BiochemBehav. 2015 Aug;135:227-36. [5]. Nagasawa M, et al. Chronic imipramine treatment differentially alters the brain and plasma amino acid metabolism in Wistar and Wistar Kyoto rats. Eur J Pharmacol. 2015 Sep 5;762:127-35. [6]. Tokarski K, et al. Imipramine counteracts corticosterone-induced alterations in the effects of the activation of 5-HT(7) receptors in rat hippocampus. J Physiol Pharmacol. 2009 Jun;60(2):83-8.