Bromocriptine mesylate

Cat. No.: HY-12705A

CAS No.: 22260-51-1

Molecular Formula: $C_{33}H_{44}BrN_5O_8S$

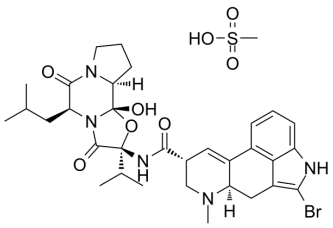
Molecular Weight: 750.7

Target: Dopamine Receptor; Autophagy

Pathway: GPCR/G Protein; Neuronal Signaling; Autophagy

Storage: 4°C, protect from light

* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 75 mg/mL (99.91 mM; Need ultrasonic)

H_2O : 1.1 mg/mL (1.47 mM; ultrasonic and adjust pH to 3 with HCl)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.3321 mL	6.6605 mL	13.3209 mL
5 mM	0.2664 mL	1.3321 mL	2.6642 mL
10 mM	0.1332 mL	0.6660 mL	1.3321 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (2.77 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (2.77 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (2.77 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Bromocriptine mesylate is a potent dopamine D2/D3 receptor agonist, which binds D2 dopamine receptor with pK_i of 8.05±0.2.

IC_{50} & Target

pKi: 8.05±0.2 (dopamine D2 receptor)[1]

In Vitro

Bromocriptine stimulates [^{35}S]-GTPγS binding at D2 dopamine receptor expressed in CHO cells with pEC_{50} of 8.15±0.05[1]. Bromocriptine also is a strong inhibitor of brain nitric oxide synthase. The ergot alkaloid Bromocriptine (BKT) is found to act as a strong inhibitor of purified neuronal nitric oxide synthase (NOS) (IC_{50}=10±2 μM) whereas it is poorly active towards

	inducible macrophage NOS (IC_{50}>100 μM) [2]. Bromocriptine is found to inhibit the activity of at least one human cytochrome P450 enzyme. Bromocriptine is a potent inhibitor of CYP3A4 with a calculated IC_{50} value for the interaction of 1.69 μM[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Bromocriptine mesylate (2 mg/kg, i.p.) is administered for 7 days in groups of mice in forced swimming test (FST) and tail suspension test (TST). Bromocriptine group shows significant anti-immobility action as compared to control. When Bromocriptine administered 30 min after the last dose of 7 days MPE treatment and subjected to FST, this dopaminergic agonist produces significant and dose dependent potentiation of anti-immobility action of MPE (200 mg/kg, p.o.) as compared to MPE treatment alone. Bromocriptine treatment group shows a significant reduction of immobility time as compared to control. Bromocriptine administration after 7 days pretreatment with MPE (100 and 200 mg/kg, p.o.) shows significant and dose dependent potentiation of anti-immobility action of MPE as compared to MPE treatment alone[4]. Intracisternal administration of Bromocriptine decreases significantly the static mechanical allodynia (SMA) score compared to that of sham (saline-injected rats) and its effect lasted for 30 min. Intraperitoneal administration of Bromocriptine induces a significant, dose dependent (0.1 mg and 1 mg/kg) decrease in pain scores in CCI-IoN group when compared to sham and its effect lasted for 6 h. The highest dose induces the highest score decrease (P<0.01). Bromocriptine effect lasts for 20 min. Intraperitoneal administration of Bromocriptine induces a significant dose dependent decrease in SMA score in CCI-IoN+6-OHDA lesioned group compared to that of sham. Its effect lasts for 6 h[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [1]	The [^{35}S]-GTPγS binding assay is carried out. Cell membranes (25 ±75 ug) are incubated in Buffer B containing 0.1 mM dithiothreitol (DTT) and 1 uM GDP and drugs in a volume of 0.9 mL for 30 min at 30°C. This preincubation ensures that the agonists tested are at equilibrium when the [^{35}S]-GTPγS (50±150 pM, final concentration) is added (in 100 uL ofBuffer B) to initiate the reaction. The assay mixture is incubated for a further 20 min unless otherwise stated. The assays are terminated by rapid filtration and bound radio-activity determined as described for the radio-ligand binding assays above. The total binding of [^{35}S]-GTPγS is less than 20% of that added[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [4][5]	Mice[4] Swiss mice (20-25 g) of either sex (total 150) are used. Bromocriptine mesylate is used as dopamine receptor (D_2) agonist. Haloperidol is diluted in distilled water which is used for a vehicle of injection. Bromocriptine mesylate is dissolved in one drop of glacial acetic acid and made up to volume in distilled water. Imipramine is dissolved in 0.9% normal saline. Haloperidol (0.1 mg/kg, i.p.) and Bromocriptine mesylate (2 mg/kg, i.p.) are administered for 7 days in groups of mice in Forced Swimming Test (FST) and Tail Suspension Test (TST). Imipramine (10 mg/kg, p.o.) as a standard is administered in positive control groups for 7 days. Rats[5] Adult male Sprague-Dawley rats (N=112, 275-325 g) are used. Two weeks after the 6-OHDA injection, the animals are briefly (<3 min) anesthetized with 2 % halothane using a mask and received for intracisternal administration Bromocriptine (7 μ g/kg dissolved in 5 μL vehicle) or the vehicle alone (5 μL of 0.9 % saline). For i.p. injection we used Bromocriptine (1 mg/kg) and SKF81297 (3 mg/kg dissolved in 0.9 % saline) concentrations. Following a recovery period (<2 min), the rats are placed in the observation field for 40 min period-test by a blind-experimenter. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Commun. 2020 Feb 18;11(1):941.
- Br J Pharmacol. 2021 Apr 26.

- J Ethnopharmacol. 2021 Mar 9;113994.
- Eur J Integr Med. 2021, 101322.

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REFERENCES

[1]. Gardner B, et al. Agonist action at D2(long) dopamine receptors: ligand binding and functional assays. Br J Pharmacol. 1998 Jul;124(5):978-84.

[2]. Renodon A, et al. Bromocriptine is a strong inhibitor of brain nitric oxide synthase: possible consequences for the origin of its therapeutic effects.FEBS Lett. 1997 Apr 7;406(1-2):33-6.

[3]. Wynalda MA, et al. Assessment of potential interactions between dopamine receptor agonists and various human cytochrome P450 enzymes using a simple in vitro inhibition screen. Drug Metab Dispos. 1997 Oct;25(10):1211-4.

[4]. Rana DG, et al. Dopamine mediated antidepressant effect of Mucuna pruriens seeds in various experimental models of depression. Ayu. 2014 Jan;35(1):90-7.

[5]. Dieb W, et al. Nigrostriatal dopaminergic depletion increases static orofacial allodynia. J Headache Pain. 2016;17:11.

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