Product Datasheet

BRL 44408

Catalog No. **BP-02183** · CAS **118343-19-4** · Form **free base** · Physical state **solid** · Version **1.0** · Revision **2026-09-07**

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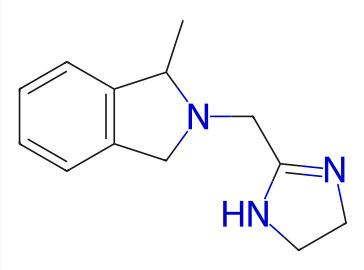
Target	Research area
Adrenergic Receptor; p38 MAPK; Dopamine Receptor; ERK	**Cardiovascular Disease; Neurological Disease**

Molecular formula	$C_{13}H_{17}N_3$
Molecular weight	**215.2942**

STRUCTURE



DESCRIPTION

BRL-44408 is a selective, blood-brain barrier-permeable α2A-adrenergic receptor antagonist with a Ki value of 8.56 nM against human targets. BRL-44408 exhibits activities such as antidepressant, analgesic effects and attenuation of sepsis-induced acute lung injury by regulating the release of neurotransmitters such as norepinephrine and dopamine, or inhibiting signaling pathways including ERK1/2, p38MAPK and p65. BRL-44408 can be used in studies related to acute respiratory distress syndrome, depression and visceral pain .

BIOLOGICAL ACTIVITY

In Vitro

BRL-44408 (0-12.5 h) can inhibit the secretion of proinflammatory cytokines and the phosphorylation of ERK1/2, p38MAPK and p65 in LPS (HY-D1056)-induced NR8383 rat alveolar macrophages, with no effect on the activation of JNK or PKA.

In Vivo

BRL-44408 (5 mg/kg; i.p.; single administration) alleviates cecal ligation and puncture (CLP)-induced acute respiratory distress syndrome (ARDS) in rats by reducing pulmonary edema, pathological damage of lung tissues, macrophage infiltration, and proinflammatory mediator production, as well as inhibiting the activation of ERK1/2, p38MAPK and p65 signaling pathways.

BRL-44408 (10 mg/kg; subcutaneous injection; single administration) significantly elevates extracellular norepinephrine (up to 204%), dopamine (up to 110%) and acetylcholine (up to 75%) levels in the medial prefrontal cortex (mPFC) of rats for at least 3.5 hours post-administration, without altering serotonin levels.

BRL-44408 (3-30 mg/kg; i.p.; administered once at 24 h, 5 h and 1 h prior to testing, for a total of 3 times) exerts significant antidepressant-like effects in the forced swimming test in rats, reducing the immobility time by 30% (10 mg/kg) and 49% (30 mg/kg), while increasing the climbing time by 48% (10 mg/kg) and 107% (30 mg/kg).

BRL-44408 (10-30 mg/kg; i.p.; single administration; pretreated 20 minutes before testing) exerts significant antidepressant-like effects in the rat procedure-induced polydipsia test, reducing the additional water intake by 34% (17 mg/kg) and 44% (30 mg/kg), respectively.

BRL-44408 (1-30 mg/kg; i.p.; single administration; pretreated 60 minutes prior to PPQ administration) exerts significant analgesic effects in a mouse PPQ visceral pain model, reversing somatic stretching behaviors by 32% (10 mg/kg) and 52% (30 mg/kg), respectively.

REFERENCES

[1]. Cong Z, et al. α2A -AR antagonism by BRL-44408 maleate attenuates acute lung injury in rats with downregulation of ERK1/2, p38MAPK, and p65 pathway. J Cell Physiol. 2020;235(10):6905-6914.

[2]. Dwyer JM, et al. Preclinical characterization of BRL 44408: antidepressant- and analgesic-like activity through selective alpha2A-adrenoceptor antagonism. Int J Neuropsychopharmacol. 2010;13(9):1193-1205.

[3]. Further Studies on a2-Adrenofeptor Subtypes Involved in the Modulation of [HINoradrenaline and [3H]5-Hydroxytryptamine Release from Rat Brain Cortex Synaptosomes