# Risperidone

**Cat. No.:** HY-11018

**CAS No.:** 106266-06-2

**Molecular Formula:** $C_{23}H_{27}FN_4O_2$

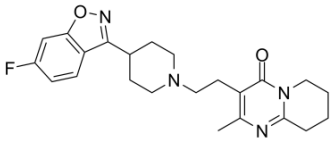
**Molecular Weight:** 410.48

**Target:** 5-HT Receptor; Dopamine Receptor; P-glycoprotein

**Pathway:** GPCR/G Protein; Neuronal Signaling; Membrane Transporter/Ion Channel

**Storage:**

| | | |
|---|---|---|
| Powder | -20°C | 3 years |
| | 4°C | 2 years |
| In solvent | -80°C | 6 months |
| | -20°C | 1 month |



## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 10 mg/mL (24.36 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 2.4362 mL | 12.1809 mL | 24.3617 mL |
| | 5 mM | 0.4872 mL | 2.4362 mL | 4.8723 mL |
| | 10 mM | 0.2436 mL | 1.2181 mL | 2.4362 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: ≥ 1 mg/mL (2.44 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1 mg/mL (2.44 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 1 mg/mL (2.44 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

Risperidone is a serotonin 5-$HT_2$ receptor blocker, P-Glycoprotein inhibitor and potent dopamine $D_2$ receptor antagonist, with $K_i$s of 4.8, 5.9 nM for 5-$HT_{2A}$ and dopamine $D_2$ receptor, respectively.

**$IC_{50}$ & Target**

| 5-$HT_{2A}$ Receptor | dopamine $D_2$ receptor | P-Glycoprotein |
|---|---|---|
| 4.8 nM (Ki) | 5.9 nM (Ki) | |

**In Vitro**

Risperidone is a serotonin 5-$HT_2$ receptor blocker, P-Glycoprotein inhibitor and potent dopamine $D_2$ receptor antagonist,

| | |
|---|---|
| | with $K_i$s of 4.8, 5.9 nM for 5-$HT_{2A}$ and dopamine $D_2$ receptor, respectively. Risperidone dose-dependently inhibited the release of IL-12 in mature DCs, while the production of IL-10 is dose-dependently increased by Risperidone. A high dose of risperidone can induce TNF-α release from mature DCs[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | In the first experiment, body weight is found to be slightly but significantly lower in the Risperidone-treated rats as a function of age. Similar to the first experiment, age-dependent differences in body weight are also observed between the three treatment groups in the second locomotor experiment. Rats treated with the 3.0 mg/kg dose of Risperidone weigh less than vehicle-treated rats on postnatal days 35, 38, and 41. The third locomotor experiment involves larger, mixed-sex litters in contrast to the smaller, single-sex litters used in the first two experiments. As noted for the first two experiments, rats treated with Risperidone in the third experiment gain less weight in an age-dependent manner[4].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## PROTOCOL

| | |
|---|---|
| **Animal Administration [4]** | Rats[4]<br>A total of 211 Long-Evans rats (56 females and 155 males) are used. Within each study, three groups of roughly equal numbers of rats receive injections of 1.0 mg/kg of Risperidone, 3.0 mg/kg of Risperidone, or the vehicle used for the Risperidone solution as a control. In the first experiment, twenty-six male rats (n=9 in the vehicle and 3.0 mg/kg Risperidone groups; n=8 in the 1.0 mg/kg Risperidone group) are tested for locomotor activity for 20 minutes a day beginning at postnatal day 49 and continuing daily until postnatal day 53. A second experiment determined if the locomotor effects of early-life Risperidone treatment persisted well into adulthood. A third experiment ascertains the effects of sex on the locomotor effects of early-life Risperidone seen in young adult rats. In this experiment, sixty male (n=20 per treatment group) and 56 female (n=19 rats in the vehicle and 3.0 mg/kg dose group, n=18 in the 1.0 mg/kg dose group) rats are treated. A fourth experiment assessed reversal learning during adulthood in rats administered earlylife risperidone. Forty-two male rats (n=14 per treatment group) are treated[4].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## REFERENCES


[1]. Nyberg S, et al. 5-HT2 and D2 dopamine receptor occupancy in the living human brain. A PET study with risperidone. Psychopharmacology (Berl). 1993;110(3):265-72.

[2]. Zhu HJ, et al. Risperidone and paliperidone inhibit p-glycoprotein activity in vitro. Neuropsychopharmacology. 2007 Apr;32(4):757-64.

[3]. Chen ML, et al. Risperidone modulates the cytokine and chemokine release of dendritic cells and induces TNF-α-directed cell apoptosis in neutrophils. Int Immunopharmacol. 2012 Jan;12(1):197-204.

[4]. Bardgett ME, et al. Adult rats treated with risperidone during development are hyperactive. Exp Clin Psychopharmacol. 2013 Jun;21(3):259-67.





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