

Product Datasheet

Mirabegron

Catalog No. **BP-02316** · CAS **223673-61-8** · Form **free base** · Physical state **solid** · Color **white to light yellow** · Version **1.0** · Revision **2026-09-10**

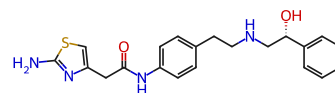
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Target Adrenergic Receptor	Research area Neurological Disease; Endocrinology; Cancer
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Molecular formula **C₂₁H₂₄N₄O₂S**

Molecular weight **396.5060**

STRUCTURE



DESCRIPTION

Mirabegron is a selective β_3 -adrenoceptor agonist with EC₅₀ of 22.4 nM.

BIOLOGICAL ACTIVITY

In Vitro

Mirabegron (YM178) increases cyclic AMP accumulation in Chinese hamster ovary (CHO) cells expressing human β_3 -adrenoceptor (AR). EC₅₀ value is 22.4 nM. EC₅₀ values of Mirabegron for human β_1 - and β_2 -ARs are 10,000 nM or more, respectively. EC₅₀ of Mirabegron in rat bladder strips precontracted with 10⁻⁶ M Carbachol (CCh) is 5.1 μ M, whereas that in human bladder strips precontracted with 10⁻⁷ M CCh is 0.78 μ M. Mirabegron concentration-dependently increases the accumulation of cAMP in CHO cells expressing human β_3 -ARs, with an EC₅₀ value and I.A. of 22.4 nM and 0.8, respectively. Mirabegron has little agonistic effect on β_1 - and β_2 -ARs. Compared by EC₅₀ value, Mirabegron is approximately one third as potent as isoproterenol. The maximal relaxant effects of Mirabegron are 94 $\pm$ 1%, that of CCh, indicating that Mirabegron acts a full agonist in the rat bladder. The maximal relaxant effects of Mirabegron is 89.4 $\pm$ 2.3%.

In Vivo

Mirabegron (YM178) produces a dose-dependent decrease in the frequency of rhythmic bladder contraction in anesthetized rats. In contrast, Mirabegron does not decrease the amplitude of rhythmic bladder contraction at up to 3 mg/kg i.v.. On the contrary, Oxybutynin significantly increases the frequency of rhythmic bladder contraction and decreased its amplitude at doses of 0.272 mg/kg i.v. or more.

REFERENCES

[1]. Takasu T, et al. Effect of (R)-2-(2-aminothiazol-4-yl)-4'-{2-[(2-hydroxy-2-phenylethyl)amino]ethyl} acetanilide (YM178), a novel selective beta3-adrenoceptor agonist, on bladder function. J Pharmacol Exp Ther. 2007 May;321(2):642-7.

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