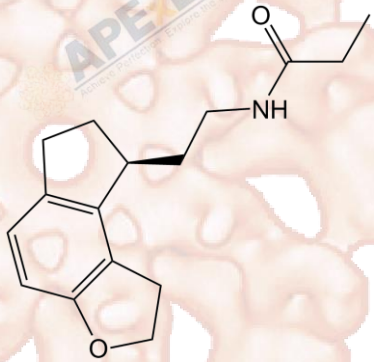
Product Data Sheet

# Ramelteon




**Cat. No.:** A1748

**CAS No.:** 196597-26-9

**Formula:** C16H21NO2

**M.Wt:** 259.34

**Synonyms:**

**Target:** GPCR/G protein

**Pathway:** MT Receptor

**Storage:** Store at -20°C

## Solvent & Solubility

In Vitro

insoluble in H2O; ⩾12.95 mg/mL in DMSO; ⩾54.9 mg/mL in EtOH

Preparing Stock Solutions

| Mass / Solvent / Concentration | 1mg | 5mg | 10mg |
|---|---|---|---|
| 1 mM | 3.8559 mL | 19.2797 mL | 38.5594 mL |
| 5 mM | 0.7712 mL | 3.8559 mL | 7.7119 mL |
| 10 mM | 0.3856 mL | 1.9280 mL | 3.8559 mL |

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

## Biological Activity

| | |
|---|---|
| Shortsummary | Agonist of melatonin receptor(M1-M2),highly selective |
| $IC_{50}$ & Target | 0.014 nM (Ki) (MT1), 0.045 nM (Ki) (MT2) |

In Vitro

**Cell Viability Assay**

| | |
|---|---|
| Cell Line: | Pancreatic INS-1 β-cells |
| Preparation method: | The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37°C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months. |
| Reacting conditions: | 2-14 h |

| | | |
|---|---|---|
| | Applications: | Ramelteon is a potent and selective agonist of MT1/MT2 melatonin receptors. Ramelteon inhibits forskolin-stimulated cAMP production in the CHO cells that express the human MT1 or MT2 receptors [2]. Ramelteon is capable of increasing brain-derived neurotrophic factor (BDNF) protein in neurons expressing either MT1 or MT2 receptor type in mouse cerebellar granule cells [3]. |
| In Vivo | **Animal experiment** | |
| | Animal models: | Freely moving cats |
| | Dosage form: | 0.001, 0.01, and 0.1 mg/kg; administered orally. |
| | Applications: | In cats, ramelteon has a sleep-promoting action and does not appear to cause learning, memory, or motor function impairment, or to have rewarding properties [4]. In a clinical study, ramelteon decreases latency to persistent sleep and increases total sleep time and sleep efficiency in subjects with primary chronic insomnia [1]. |
| | Preparation method: | Suspended in a 0.5% (weight per volume) methylcellulose solution. |
| | Other notes: | Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal. |

## Product Citations

1. Cassar S, Beekhuijzen M, et al. "A multi-institutional study benchmarking the zebrafish developmental assay for prediction of embryotoxic plasma concentrations from rat embryo-fetal development studies." Reprod Toxicol. 2019 Jun;86:33-44.PMID:30876927

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## References

[1]. Kato K, Hirai K, Nishiyama K, et al. Neurochemical properties of ramelteon (TAK-375), a selective MT1/MT2 receptor agonist. Neuropharmacology, 2005, 48(2): 301-310.

[2]. Nishiyama K, Hirai K. The melatonin agonist ramelteon induces duration-dependent clock gene expression through cAMP signaling in pancreatic INS-1 β-cells. PLoS One, 2014, 9(7): e102073.

[3]. Imbesi M, Uz T, Dzitoyeva S, et al. Stimulatory effects of a melatonin receptor agonist, ramelteon, on BDNF in mouse cerebellar granule cells. Neurosci Lett, 2008, 439(1): 34-36.

[4]. Miyamoto M, Nishikawa H, Doken Y, et al. The sleep-promoting action of ramelteon (TAK-375) in freely moving cats. Sleep, 2004, 27(7): 1319-1325.

## Caution

**FOR RESEARCH PURPOSES ONLY.**

**NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

*Specific storage and handling information for each product is indicated on the product datasheet. Most APExBIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.*

**APExBIO Technology**

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