# MIR002

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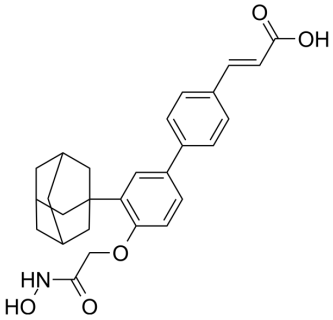
| **Cat. No.:** | HY-143412 |
| **CAS No.:** | 2217671-64-0 |
| **Molecular Formula:** | $C_{27}H_{29}NO_5$ |
| **Molecular Weight:** | 447.52 |
| **Target:** | Apoptosis; DNA/RNA Synthesis; HDAC |
| **Pathway:** | Apoptosis; Cell Cycle/DNA Damage; Epigenetics |
| **Storage:** | Please store the product under the recommended conditions in the Certificate of Analysis. |




## BIOLOGICAL ACTIVITY

**Description**

MIR002 is a potent and orally active DNA polymerase α (POLA1) and HDAC 11 dual inhibitor. MIR002 induces acetylation of p53, activation of p21, G1/S cell cycle arrest, and apoptosis. MIR002 shows significant antitumor activity in vivo[1].

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

| HDAC11 | POLA1 |
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| 6.09 μM ($IC_{50}$) | |

**In Vitro**

MIR002 (24 h) shows antiproliferative activity at nanomolar concentrations ($IC_{50}$s of 0.25, 2.8, 0.6, 0.41 μM in NCI-H460, H460-R9A, A2780, A2780-DX; $IC_{50}$s of 0.9, 1.2, 0.22, 0.71, 2.1, 0.52, 0.038, 0.18, 0.42, 1.9, 0.64, 1.1 μM in MM432, MM473, MM487, RAMOS, L-428, U-293, Z-138, NB4, THP-1, MDA-MB231, MDA-MB436, U87MG cells, respectively)[1].
MIR002 (0.0001,0.01, 1, 10 μM) shows inhibitory activity on HDAC11 with an $IC_{50}$ of 6.09 μM[1].
MIR002 (0.1, 0.25, 0.4 μM, 24 h) shows a dose-dependent p53 acetylation and p21 induction as well as H2AX Phosphorylation [1].MIR002 (72 h) leads to cell cycle arrest at the G1-S phase[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Proliferation Assay[1]

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| Cell Line: | MM432, MM473, MM487, RAMOS, L-428, U-293, Z-138, NB4, THP-1, MDA-MB231, MDA-MB436, U87MG cells |
| Concentration: | 10 scalar concentrations |
| Incubation Time: | 24 h |
| Result: | Showed antiproliferative activity at nanomolar concentrations ($IC_{50}$s of 0.9, 1.2, 0.22, 0.71, 2.1, 0.52, 0.038, 0.18, 0.42, 1.9, 0.64, 1.1 μM in MM432, MM473, MM487, RAMOS, L-428, U-293, Z-138, NB4, THP-1, MDA-MB231, MDA-MB436, U87MG cells, respectively) |

Western Blot Analysis[1]

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| Cell Line: | NCI-H460, MM473, MM487, A2780 cells |
| Concentration: | 0.1, 0.25, 0.4 μM |
| Incubation Time: | 24 h |
| Result: | Showed antiproliferative activity at nanomolar concentrations ($IC_{50}$s of 0.9, 1.2, Showed a |

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| | dosedependent p53 acetylation and p21 induction as well as H2AX Phosphorylation. |

Cell Cycle Analysis[1]

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| Cell Line: | NCI-H460, A2780, MM473, H460-R9A cells |
| Concentration: | 0.25 μM for NCI-H460, 0.6 μM for A2780, 1.2 μM for MM473, 2.8 μM for H460-R9A |
| Incubation Time: | 72 h |
| Result: | Cells were arrested at the G1-S phase. |

**In Vivo**

MIR002 (50 mg/kg; p.o.; twice a day for 5 days a week, 3 weeks) shows a good tolerability and antitumor activity (TGI=61%)[1].

MIR002 (50 mg/kg; p.o.; twice a day for 5 days a week, 6 weeks) shows an additive antitumor effect with complete disappearance of tumor masses in two animals at the end of the treatment when combination with cisplatin[1].

MIR002 ( 50 mg/kg, twice a day for 5 days) induces a significant increase of a interferon at its pharmacological active dose (50 mg/kg)[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

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| Animal Model: | Model: 4-6 weeks old female CD-1 nude mice (NSCLC NCI-H460 model) |
| Dosage: | 50 mg/kg |
| Administration: | p.o.; twice a day for 5 days a week, 3 weeks |
| Result: | Showed a good tolerability and antitumor activity (TGI=61%). |

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| Animal Model: | 4-6 weeks old female CD-1 nude mice ( MM473-luc and MM487-Luc)[1] |
| Dosage: | 50 mg/kg combibnated with cisplatin (i.p.; 5 mg/kg; twice a day for 7 days a week, 6 weeks) |
| Administration: | p.o.; twice a day for 5 days a week, 6 weeks |
| Result: | Showed an additive antitumor effect with complete disappearance of tumor masses in two animals at the end of the treatment when combination with cisplatin. |

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| Animal Model: | 4-6 weeks old female CD-1 nude mice (Melanoma B16 model)[1] |
| Dosage: | 50 mg/kg |
| Administration: | p.o.; twice a day for 5 days |
| Result: | Induced a significant increase of α interferon at its pharmacological active dose (50 mg/kg). |

## REFERENCES

[1]. Dallavalle S, et al. Antitumor activity of novel POLA1-HDAC11 dual inhibitors. Eur J Med Chem. 2022, 228:113971.

**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA