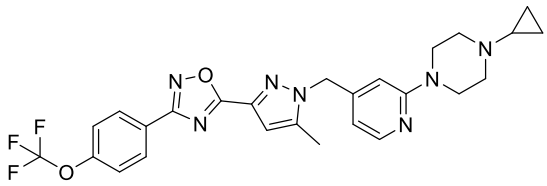
Product data sheet

MedKoo Cat#: 205901 Name: BAY 87-2243 CAS#: 1227158-85-1 Chemical Formula: $C_{26}H_{26}F_3N_7O_2$ Exact Mass: 525.21 Molecular Weight: 525.54	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
BAY 87-2243 is a highly potent and selective inhibitor of hypoxia-induced gene activation, which has antitumor activities by inhibition of mitochondrial complex I. BAY 87-2243 mproves local tumor control after fractionated irradiation in a schedule-dependent manner in head and neck human xenografts. BAY-87-2243 markedly decreased nuclear HIF-1α expression and pimonidazole hypoxic fraction already after 3 days of drug treatment. BAY-87-2243 prior to RT significantly reduced TCD50 from 123 to 100 Gy (p=0.037). Additional BAY-87-2243 application during RT did not decrease TCD50.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	25	47.57

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.90 mL	9.51 mL	19.03 mL
5 mM	0.38 mL	1.90 mL	3.81 mL
10 mM	0.19 mL	0.95 mL	1.90 mL
50 mM	0.04 mL	0.19 mL	0.38 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Ellinghaus P, Heisler I, Unterschemmann K, Haerter M, Beck H, Greschat S, Ehrmann A, Summer H, Flamme I, Oehme F, Thierauch K, Michels M, Hess-Stumpp H, Ziegelbauer K. BAY 87-2243, a highly potent and selective inhibitor of hypoxia-induced gene activation has antitumor activities by inhibition of mitochondrial complex I. Cancer Med. 2013 Oct;2(5):611-24. doi: 10.1002/cam4.112. Epub 2013 Aug 20. PMID: 24403227; PMCID: PMC3892793.

In vivo study

1. Helbig L, Koi L, Brüchner K, Gurtner K, Hess-Stumpp H, Unterschemmann K, Baumann M, Zips D, Yaromina A. BAY 87-2243, a novel inhibitor of hypoxia-induced gene activation, improves local tumor control after fractionated irradiation in a schedule-dependent manner in head and neck human xenografts. Radiat Oncol. 2014 Sep 19;9:207. doi: 10.1186/1748-717X-9-207. PMID: 25234922; PMCID: PMC4262387.

2. Ellinghaus P, Heisler I, Unterschemmann K, Haerter M, Beck H, Greschat S, Ehrmann A, Summer H, Flamme I, Oehme F, Thierauch K, Michels M, Hess-Stumpp H, Ziegelbauer K. BAY 87-2243, a highly potent and selective inhibitor of hypoxia-induced

gene activation has antitumor activities by inhibition of mitochondrial complex I. Cancer Med. 2013 Oct;2(5):611-24. doi: 10.1002/cam4.112. Epub 2013 Aug 20. PMID: 24403227; PMCID: PMC3892793.

7. Bioactivity

Biological target:

BAY 87-2243 is a potent and selective hypoxia-inducible factor-1 (HIF-1) inhibitor.

In vitro activity

To evaluate dose dependency of BAY 87-2243 on HIF-1 transcriptional activity, H460 cells were cultured under normoxia and hypoxia (16 h, 1% pO2) with various concentrations of BAY 87-2243 ranging from 1 to 1000 nmol/L, and the mRNA level of the HIF-1 target genes CA9, adrenomedullin (ADM), and angiopoietin-like protein-4 (ANGPTL4) was quantified by real-time PCR. EGLN2, a PHD known to be expressed independent of the oxygen supply served as a negative control. BAY 87-2243 suppressed HIF-1 target gene expression dose dependently under hypoxia, but a weak reduction of baseline HIF-1 target gene mRNA expression levels was also observed under normoxia. Notably, expression of EGLN2 was not affected by BAY 87-2243 treatment neither under normoxia nor under hypoxia (Fig. 2A). Additional negative controls (genes not regulated by hypoxia) were evaluated by real-time PCR after incubation of normoxic and hypoxic H460 cells with BAY 87-2243 at concentrations up to 10 μmol/L. No signs of unspecific transcription inhibition were observed even at such high dosages (Fig. S1).

Reference: Cancer Med. 2013 Oct;2(5):611-24. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/24403227/

In vivo activity

To test the inhibitory effect of BAY-87-2243 on HIF-1α protein expression, tumors were treated with the drug for 3, 5 or 7 consecutive days. Nuclear HIF-1α protein levels were strongly suppressed after 3 days of drug treatment (Figure 1). Cytoplasmic cell extracts showed none or very weak HIF-1α protein expression (data not shown). To study the kinetics of changes in tumor microenvironment induced by BAY-87-2243, hypoxia, vasculature and perfused vessels were examined in tumors after 3, 5 and 7 days of drug treatment. Three daily applications of BAY-87-2243 markedly reduced pHF to 1% as compared with 25% in carrier-treated tumors ($p < 0.0001$, Figures 2 and and3a).3a). This decrease in pHF remained after BAY-87-2243 treatment for 5 and 7 days. A statistically significant reduction in RVA was found 5 and 7 days after BAY-87-2243 treatment as compared with carrier-treated tumors ($p=0.033$ and $p=0.026$, respectively, Figure 3a). BAY-87-2243 did not affect PF at any time point. Necrotic fraction was statistically significantly lower only after 3 days of drug treatment ($p=0.018$).

Reference: Radiat Oncol. 2014 Sep 19;9:207. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/25234922/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.