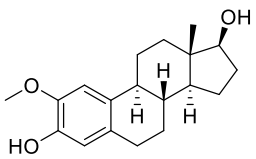
Product data sheet

MedKoo Cat#: 201830 Name: 2-methoxyestradiol CAS#: 362-07-2 Chemical Formula: $C_{19}H_{26}O_3$ Exact Mass: 302.18819 Molecular Weight: 302.41		
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:
2-methoxyestradiol, also known as 2-ME, is an orally bioavailable estradiol metabolite with potential antineoplastic activity. 2-Methoxyestradiol inhibits angiogenesis by reducing endothelial cell proliferation and inducing endothelial cell apoptosis. This agent also inhibits tumor cell growth by binding to tubulin, resulting in antimitotic activity, and by inducing caspase activation, resulting in cell cycle arrest in the G2 phase, DNA fragmentation, and apoptosis.

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	48.78	161.30
DMF	30.0	99.20
DMF:PBS (pH 7.2) (1:1)	0.5	1.65
Ethanol	1.0	3.31

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.31 mL	16.53 mL	33.07 mL
5 mM	0.66 mL	3.31 mL	6.61 mL
10 mM	0.33 mL	1.65 mL	3.31 mL
50 mM	0.07 mL	0.33 mL	0.66 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. Löhndorf A, Hosang L, Dohle W, Odoardi F, Waschkowski SA, Rosche A, Bauche A, Winzer R, Tolosa E, Windhorst S, Marry S, Flügel A, Potter BVL, Diercks BP, Guse AH. 2-Methoxyestradiol and its derivatives inhibit store-operated Ca2+ entry in T cells: Identification of a new and potent inhibitor. Biochim Biophys Acta Mol Cell Res. 2021 May;1868(6):118988. doi: 10.1016/j.bbamcr.2021.118988. Epub 2021 Feb 10. PMID: 33581218; PMCID: PMC8062851.
2. Pal P, Hales K, Hales DB. The pro-apoptotic actions of 2-methoxyestradiol against ovarian cancer involve catalytic activation of PKCδ signaling. Oncotarget. 2020 Oct 6;11(40):3646-3659. doi: 10.18632/oncotarget.27760. PMID: 33088425; PMCID: PMC7546757.

In vivo study

Product data sheet

1. Tofovic SP, Zhang X, Jones TJ, Petruševska G. 2-Methoxyestradiol Attenuates the Development and Retards the Progression of Hypoxia-And Alpha-Naphthylthiourea-Induced Pulmonary Hypertension. Pril (Makedon Akad Nauk Umet Odd Med Nauki). 2021 Apr 23;42(1):41-51. doi: 10.2478/prilozi-2021-0003. PMID: 33894125.
2. Liao WI, Wu SY, Tsai SH, Pao HP, Huang KL, Chu SJ. 2-Methoxyestradiol Protects Against Lung Ischemia/Reperfusion Injury by Upregulating Annexin A1 Protein Expression. Front Immunol. 2021 Mar 16;12:596376. doi: 10.3389/fimmu.2021.596376. PMID: 33796096; PMCID: PMC8007881.

7. Bioactivity

Biological target:

2-Methoxyestradiol (2-ME2) is an apoptosis inducer and an angiogenesis inhibitor with potent antineoplastic activity.

In vitro activity

BG1 cells transfected with $PKC\delta^{WT}$, $PKC\delta^{DN}$ or pGFP (mock) were treated with 10 μM $2MeOE_2$ (2-methoxyestradiol) for 24 h. Western blots demonstrated that $2MeOE_2$ treatment of BG1 cells transfected with $PKC\delta^{WT}$ resulted in a significantly higher amount of cleaved caspase-3, phosphorylated p38 MAPK and phH2Bser14 expression compared to untransfected and mock transfected BG1 cells. Notably, $2MeOE_2$ treatment of the $PKC\delta^{DN}$ -transfected cells did not alter cleavage of caspase-3, phosphorylation of p38 MAPK or phH2Bser14 expression compared to the untransfected and mock (Figure 3B).

Reference: Oncotarget. 2020 Oct 6; 11(40): 3646–3659. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7546757/

In vivo activity

Compared to rats subjected to IR injury, rats pretreated with 2ME (2-methoxyestradiol) exhibited significantly attenuated IR-induced lung edema in a dose-dependent manner (Figures 1A–E and Supplementary Figures 3B–F). However, the addition of the anti-AnxA1 antibody or BOC2 significantly blocked the protective effects of 2ME on IR-induced lung edema. There was no statistically significant difference in the perfusate pH and PaCO2 levels between groups. Compared with the vehicle control, IR injury significantly increased the difference between final PaO2 and baseline PaO2 levels. The 2ME pretreatment significantly reduced the PaO2 difference in the IR group (Supplementary Table 1).

Reference: Front Immunol. 2021; 12: 596376. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8007881/

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.