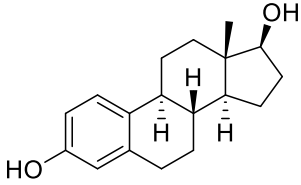


# Product data sheet



MedKoo Cat#: 317788 Name: Estradiol CAS#: 50-28-2 Chemical Formula: C <sub>18</sub> H <sub>24</sub> O <sub>2</sub> Exact Mass: 272.17763 Molecular Weight: 272.38		
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:

Estradiol is an Estrogen. Estradiol is the 17-beta-isomer of estradiol, an aromatized C18 steroid with hydroxyl group at 3-beta- and 17-beta-position. Estradiol-17-beta is the most potent form of mammalian estrogenic steroids. The mechanism of action of estradiol is as an Estrogen Receptor Agonist. Therapeutic Estradiol is a steroid sex hormone vital to the maintenance of fertility and secondary sexual characteristics in females. Typically esterified, estradiol derivatives are formulated for oral or parenteral administration.

## 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	37.81	138.81
DMSO:PBS (pH 7.2) (1:4)	0.2	0.73
DMF	20.0	73.43
Ethanol	14.23	52.24

## 4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.67 mL	18.36 mL	36.71 mL
5 mM	0.73 mL	3.67 mL	7.34 mL
10 mM	0.37 mL	1.84 mL	3.67 mL
50 mM	0.07 mL	0.37 mL	0.73 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. Pan Q, Guo K, Xue M, Tu Q. Estradiol exerts a neuroprotective effect on SH-SY5Y cells through the miR-106b-5p/TXNIP axis. *J Biochem Mol Toxicol.* 2021 Jul 28:e22861. doi: 10.1002/jbt.22861. Epub ahead of print. PMID: 34318539.
2. Zhang ML, Chen H, Yang Z, Zhang MN, Wang X, Zhao K, Li X, Xiu N, Tong F, Wang YX. 17β-Estradiol Attenuates LPS-Induced Macrophage Inflammation In Vitro and Sepsis-Induced Vascular Inflammation In Vivo by Upregulating miR-29a-5p Expression. *Mediators Inflamm.* 2021 Jun 9;2021:9921897. doi: 10.1155/2021/9921897. PMID: 34220338; PMCID: PMC8211527.

### In vivo study

1. Khan I, Saeed K, Jo MG, Kim MO. 17-β Estradiol Rescued Immature Rat Brain against Glutamate-Induced Oxidative Stress and Neurodegeneration via Regulating Nrf2/HO-1 and MAP-Kinase Signaling Pathway. *Antioxidants (Basel).* 2021 Jun 1;10(6):892. doi: 10.3390/antiox10060892. PMID: 34206065; PMCID: PMC8229583.

# Product data sheet



2. Liu Y, Xu XX, Cao Y, Mo SY, Bai SS, Fan YY, Zhang XY, Xie QF.  $17\beta$ -Estradiol Exacerbated Experimental Occlusal Interference-Induced Chronic Masseter Hyperalgesia by Increasing the Neuronal Excitability and TRPV1 Function of Trigeminal Ganglion in Ovariectomized Rats. *Int J Mol Sci.* 2021 Jun 28;22(13):6945. doi: 10.3390/ijms22136945. PMID: 34203300; PMCID: PMC8269106.

## 7. Bioactivity

### Biological target:

---

Estradiol is a steroid sex hormone vital to the maintenance of fertility and secondary sexual characteristics in females.

### In vitro activity

---

In conclusion, estradiol treatment on SH-SY5Y cells downregulates TXNIP expression and upregulates miR-106b-5p expression. miR-106b-5p exerts a neuroprotective effect on SH-SY5Y cells by promoting cell proliferation and inhibiting cell apoptosis through targeting TXNIP.

Reference: *J Biochem Mol Toxicol.* 2021 Jul 28:e22861. doi: 10.1002/jbt.22861. <https://pubmed.ncbi.nlm.nih.gov/34318539/>

### In vivo activity

---

On the contrary, co-treatment of E2 (estradiol) (10 mg/kg) with glutamate significantly abrogated brain neuroinflammation, neurodegeneration and synapse loss by alleviating brain oxidative stress by upregulating the Nrf2/HO-1 antioxidant pathway and by deactivating pro-apoptotic P-JNK/P-p38 and activation of pro-survival P-Erk1/2 MAP kinase pathways. In brief, the data demonstrate the neuroprotective role of E2 against glutamate excitotoxicity-induced neurodegeneration. The study also encourages future studies investigating if E2 may be a potent neuroprotective and neurotherapeutic agent in different neurodegenerative diseases.

Reference: *Antioxidants (Basel).* 2021 Jun 1;10(6):892. <https://pubmed.ncbi.nlm.nih.gov/34206065/>

*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.*