# **Product data sheet**



MedKoo Cat#: 315241				
Name: Estriol				
CAS#: 50-27-1 (free base)				
Chemical Formula: $C_{18}H_{24}O_3$				
Exact Mass: 288.17254				
Molecular Weight: 288.38				
Product supplied as:	Powder			
Purity (by HPLC):	$\geq 98\%$			
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:

Estriol (also oestriol) is one of the three main estrogens produced by the human body. In pregnant women with multiple sclerosis (MS), estriol reduces the disease's symptoms noticeably, according to researchers at UCLA's Geffen Medical School. Estriol can be a weak or strong estrogen depending on if it is given acutely or chronically when given to immature animals, but is an antagonist when given in combination with estradiol. Estriol may play a role in the development of breast cancer, but based on in vitro research does appear to act as an antagonist to the G-protein coupled estrogen receptor. Though estriol is used as part of the primarily North American phenomenon of bioidentical hormone replacement therapy, it is not approved for use by the FDA or Health Canada. (Source: http://en.wikipedia.org/wiki/Estriol).

#### 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

5. Solubility data				
Max Conc. mg/mL	Max Conc. mM			
59.0	204.59			
30.0	104.03			
0.5	1.73			
7.5	26.01			
-	Max Conc. mg/mL 59.0 30.0 0.5 7.5			

#### 4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.47 mL	17.34 mL	34.68 mL
5 mM	0.69 mL	3.47 mL	6.94 mL
10 mM	0.35 mL	1.73 mL	3.47 mL
50 mM	0.07 mL	0.35 mL	0.69 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

 Girgert R, Emons G, Gründker C. Inhibition of GPR30 by estriol prevents growth stimulation of triple-negative breast cancer cells by 17β-estradiol. BMC Cancer. 2014 Dec 11;14:935. doi: 10.1186/1471-2407-14-935. PMID: 25496649; PMCID: PMC4364648.
Diller M, Schüler S, Buchholz S, Lattrich C, Treeck O, Ortmann O. Effects of estriol on growth, gene expression and estrogen response element activation in human breast cancer cell lines. Maturitas. 2014 Apr;77(4):336-43. doi: 10.1016/j.maturitas.2014.01.004. Epub 2014 Jan 23. PMID: 24529907.

In vivo study

## **Product data sheet**



1. Vermillion MS, Ursin RL, Attreed SE, Klein SL. Estriol Reduces Pulmonary Immune Cell Recruitment and Inflammation to Protect Female Mice From Severe Influenza. Endocrinology. 2018 Sep 1;159(9):3306-3320. doi: 10.1210/en.2018-00486. PMID: 30032246; PMCID: PMC6109301.

2. Yamabe N, Kang KS, Lee W, Kim SN, Zhu BT. Estriol blunts postprandial blood glucose rise in male rats through regulating intestinal glucose transporters. Am J Physiol Endocrinol Metab. 2015 Mar 1;308(5):E370-9. doi: 10.1152/ajpendo.00209.2013. Epub 2014 Dec 16. PMID: 25516546; PMCID: PMC4346740.

### 7. Bioactivity

Biological target:

Estriol is an antagonist of the G-protein coupled estrogen receptor in estrogen receptor-negative breast cancer cells.

#### In vitro activity

Cell number of HCC1806 cells increased at  $10^{-8}$  M 17 $\beta$ -estradiol to  $127 \pm 8\%$  of control. In cells pretreated with  $10^{-4}$  M estriol cell number significantly decreased to  $54 \pm 7\%$  of control (p < 0.05) despite stimulation with  $10^{-8}$ M 17 $\beta$ -estradiol (Figure 3A). In cell line HCC70  $10^{-8}$  M 17 $\beta$ -estradiol increased cell number to 116% of control, co-treatment with  $10^{-4}$  M estriol significantly decreased cell number to 64% of control (p < 0.01) (Figure 3B). Estriol clearly prevented the stimulation of proliferation by 17 $\beta$ -estradiol in both TNBC cell lines. Antiproliferative effects of estriol paralleled the amount of GPR30 expressed in the various cell lines (Figure 1).

Reference: BMC Cancer. 2014; 14: 935. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4364648/

In vivo activity

Furthermore, clinical IAV-associated disease—defined by alterations in breathing, posture, and activity—which was evident at 8 and 11 dpi, was significantly reduced in E3 (estriol)-treated compared with placebo-treated females (Fig. 1c). Because the therapeutic benefit of E3 in ameliorating disease in the EAE mouse model has also been demonstrated in males, this study evaluated the efficacy of E3 treatment of IAV-infected male mice. Similar to the phenotype observed for females, E3 conferred significant protection against clinical disease and body weight loss in males (Fig. 1e and 1f), suggesting that E3 mediates effects independent of biological sex.

Reference: Endocrinology. 2018 Sep; 159(9): 3306–3320. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6109301/

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.