Alpha-Estradiol

Cat. No.: HY-B0141A
CAS No.: 57-91-0
Molecular Formula: C₁₈H₂₄O₂
Molecular Weight: 272.38
Target: 5 alpha Reductase; Endogenous Metabolite
Pathway: Metabolic Enzyme/Protease
Storage: Powder
-20°C 3 years
4°C 2 years
In solvent
-80°C 6 months
-20°C 1 month

SOLVENT & SOLUBILITY

In Vitro
DMSO : 103.3 mg/mL (379.25 mM; Need ultrasonic)

<table>
<thead>
<tr>
<th>Solvent Concentration</th>
<th>Preparation of Stock Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mg</td>
<td>5 mg</td>
</tr>
<tr>
<td>1 mM</td>
<td>3.6713 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.7343 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.3671 mL</td>
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</tbody>
</table>

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description
Alpha-Estradiol is a weak estrogen and a 5α-reductase inhibitor which is used as a topical medication in the treatment of androgenic alopecia.

In Vitro
Alpha-Estradiol (17 alpha-Estradiol) is a 5α-reductase inhibitor, and inhibits testosterone metabolism catalyzed by 5 alpha-reductase[1]. Alpha-Estradiol (17 Alpha-estradiol, 10 μM) attenuates LPS-induced inflammatory markers in both C57BL/6J male and female mouse embryonic fibroblast (MEF) cells, primary pre-adipocytes and differentiated 3T3-L1 adipocytes in an ERα-dependent manner, and such effects are through decreased NFkB-p65 and increased ERα protein expression[2].

In Vivo
Alpha-Estradiol (17-alpha-estradiol, 0.01, 0.1, 1 μg) significantly reduces the percentage of central avascular/total retina area of the mouse pups. Alpha-Estradiol (1 μg) markedly decreases malondialdehyde (MDA) levels on postnatal days (PND) 9, 13, and 17 in retinas of hyperoxia-exposed pups. Alpha-Estradiol (1 μg) also decreases the number of NADPH-oxidase-positive cells, NADPH oxidase concentration and activity in retinas of the pups. In the 1.0-μg Alpha-Estradiol-treated pups, VEGF retinal concentrations are high on PND 9 but lower on PND 14 and 17. The best effect in
retinas of 1.0-μg Alpha-Estradiol-treated pups is partly reversed by ICI182780 on PND 14 and 17[3].

PROTOCOL

Cell Assay [2]

Mouse embryonic fibroblast (MEF) cells are treated for the indicated time with Alpha-Estradiol (17 α-E2) or 17 β-E2 at 10 μM concentration. Inflammation is induced by LPS at a concentration of 10 ng/mL either alone or in combination with the respective estrogen[2].

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

Animal Administration [3]

Newborn mice are randomly assigned to six groups according to the kind of treatment: room air with vehicle injection (control, group 1), hyperoxia with vehicle injection (control, group 2), hyperoxia with 0.01 μg Alpha-Estradiol injection (group 3), hyperoxia with 0.1 μg Alpha-Estradiol injection (group 4), hyperoxia with 1.0 μg Alpha-Estradiol injection (group 5), and hyperoxia with 1.0 μg Alpha-Estradiol and 10.0 μg ICI182780 injection (antagonist of estrogen receptor α and β) (group 6). The pups receive daily subcutaneous injections of either Alpha-Estradiol in vehicle (dissolved in ethanol and diluted in 0.05 mL/mouse of phosphate-buffered saline (PBS)) or vehicle alone from postnatal days (PND) 7-16. On PND 7, the pups in the hyperoxia and Alpha-Estradiol-treatment groups are exposed to hyperoxia (75 ± 2 % O2) for 5 days (PND 7-12) and then returned to normoxia (room air) for 5 days, along with the nursing mothers, whereas pups in the normoxia group are kept in normoxia from PND 7-17. The pups are humanely euthanized on PND 9, 13 (14), and 17[3].

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REFERENCES

