**Butylhydroxyanisole**

**Cat. No.**: HY-B1066  
**CAS No.**: 25013-16-5  
**Molecular Formula**: C₁₁H₁₆O₂  
**Molecular Weight**: 180.24  
**Target**: Reactive Oxygen Species; Ferroptosis  
**Pathway**: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Apoptosis  
**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: ≥ 100 mg/mL (554.82 mM)  
H₂O: 1 mg/mL (5.55 mM; ultrasonic and warming and heat to 60°C)  
* "≥" means soluble, but saturation unknown.  

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent</th>
<th>Mass</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concentration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 mM</td>
<td></td>
<td></td>
<td>5.5482 mL</td>
<td>27.7408 mL</td>
<td>55.4816 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td></td>
<td></td>
<td>1.1096 mL</td>
<td>5.5482 mL</td>
<td>11.0963 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td></td>
<td></td>
<td>0.5548 mL</td>
<td>2.7741 mL</td>
<td>5.5482 mL</td>
</tr>
</tbody>
</table>

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

### BIOLOGICAL ACTIVITY

**Description**  
Butylhydroxyanisole (Butylated hydroxyanisole) is an antioxidant used as a food additive preservative. Butylhydroxyanisole mediates liver toxicity, retardation in reproductive organ development and learning, and sleep deficit. Butylhydroxyanisole exerts neurotoxic effects and leads to disruption of the brain and nerve development[1][2][3]. Butylhydroxyanisole also is a ferroptosis inducer[4].

**In Vitro**  
Butylhydroxyanisole exerts neurotoxic effects by promoting cytosolic calcium accumulation and endoplasmic reticulum stress in astrocytes[1].  
Butylhydroxyanisole (25-100 µM; 48 hours) inhibits growth and induces death in human astrocytes[1].  
Butylhydroxyanisole (100 µM; 48 hours) decreases the expression of cell-cycle-related proteins and increased the expression of the cell cycle inhibitory protein[1].  
Butylhydroxyanisole (100 µM; 48 hours) mediates apoptotic signals in NHA–SV40LT Cells[1].  
Butylhydroxyanisole also increases the cytosolic calcium level and the expression of endoplasmic reticulum stress proteins[1].
Butylhydroxyanisole induces testicular dysfunction in mouse testis cells by dysregulating calcium homeostasis and stimulating endoplasmic reticulum stress\(^2\).

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

### Cell Proliferation Assay\(^1\)

**Cell Line:** NHA–SV40LT cells  
**Concentration:** 0 μM, 25 μM, 50 μM, 75 μM, 100 μM  
**Incubation Time:** 48 hours  
**Result:** Exerted ntiproliferative effects.

### Cell Cycle Analysis\(^1\)

**Cell Line:** NHA–SV40LT cells  
**Concentration:** 100 μM  
**Incubation Time:** 48 hours  
**Result:** Downregulated the typical cell proliferative signaling pathways, phosphoinositide 3-kinase/protein kinase B and extracellular signal-regulated kinase 1/2.

### Apoptosis Analysis\(^1\)

**Cell Line:** NHA–SV40LT cells  
**Concentration:** 100 μM  
**Incubation Time:** 48 hours  
**Result:** Increased the levels of pro-apoptotic proteins, such as BAX, cytochrome c, cleaved caspase 3, and cleaved caspase 9, and decreased the level of anti-apoptotic protein BCL-XL.

### Western Blot Analysis\(^1\)

**Cell Line:** NHA–SV40LT cells  
**Concentration:** 100 μM  
**Incubation Time:** 48 hours  
**Result:** Increased the expression of pro-apoptotic proteins and decreased the levels of anti-apoptotic proteins. Asterisks show significant effects.

### In Vivo

Butylhydroxyanisole (200 mg/kg; i.g.; daily; for three days) induces distinct expression patterns of Nrf2 and detoxification enzymes in the liver and small intestine of C57BL/6 mice\(^3\).

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

**Animal Model:** Five-week-old C57BL/6 mice (WT and Nrf2\(^{-/-}\))\(^3\)  
**Dosage:** 200 mg/kg  
**Administration:** Oral gavage, daily, for three days  
**Result:** Increased Nqo1 staining in hepatocytes, predominately in the pericentral region.
CUSTOMER VALIDATION

- Free Radic Biol Med. 2020 Dec 1;S0891-5849(20)31655-5.

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REFERENCES


