Apoptosis is a distinctive form of cell death exhibiting specific morphological and biochemical characteristics, including cell membrane blebbing, chromatin condensation, genomic DNA fragmentation, and exposure of specific phagocytosis signaling molecules on the cell surface. Cells undergoing apoptosis differ from those dying through necrosis. Necrotic cells are usually recognized by the immune system as a danger signal and, thus, resulting in inflammation; in contrast, apoptotic death is quiet and orderly. There are two major pathways of apoptotic cell death induction: The intrinsic pathway, also called the Bcl-2-regulated or mitochondrial pathway, is activated by various developmental cues or cytotoxic insults, such as viral infection, DNA damage and growth-factor deprivation, and is strictly controlled by the BCL-2 family of proteins. The extrinsic or death-receptor pathway is triggered by ligation of death receptors (members of the tumor necrosis factor (TNF) receptor family, such as Fas or TNF receptor-1 (TNFR1)) that contain an intracellular death domain, which can recruit and activate caspase-8 through the adaptor protein Fas-associated death domain (FADD; also known as MORT1) at the cell surface. This recruitment causes subsequent activation of downstream (effector) caspases, such as caspase-3, -6 or -7, without any involvement of the BCL-2 family. Studies suggest that alterations in cell survival contribute to the pathogenesis of a number of human diseases, including cancer, viral infections, autoimmune diseases, neurodegenerative disorders, and AIDS (acquired immunodeficiency syndrome). Treatments designed to specifically alter the apoptotic threshold may have the potential to change the natural progression of some of these diseases.
Apoptosis Inhibitors & Modulators

(2-Hydroxypropyl)-β-cyclodextrin (Hydroxypropyl betadex; Hyd roxypropyl-β-cyclodextrin; HP-β-CD)  Cat. No.: HY-101103

Bioactivity: (2-Hydroxypropyl)-β-cyclodextrin is a widely used drug delivery vehicle to improve the stability and bioavailability.

Purity: 95.40%
Clinical Data: No Development Reported
Size: 1 g, 5 g, 10 g

(E)-[6]-Dehydroparadol  Cat. No.: HY-77293

Bioactivity: (E)-[6]-Dehydroparadol, extracted from patent US 9272994, compound M15, shows growth inhibition and induction of apoptosis against human cancer cells with IC50 values of 43.02 μM in HCT-116 cell and 41.59 μM in H-1299 cell, respectively.

Purity: 98.87%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
5 mg, 10 mg, 50 mg, 100 mg, 500 mg

Adarotene  (ST1926)  Cat. No.: HY-14808

Bioactivity: Adarotene is an effective apoptosis inducer, which surprisingly produces DNA damage and exhibits a potent antiproliferative activity on a large panel of human tumor cells.

Purity: 99.15%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
5 mg, 10 mg, 50 mg

Apoptosis Activator 2  (1-(3,4-Dichlorobenzyl)-1H-indole-2,3-dione)  Cat. No.: HY-18633

Bioactivity: Apoptosis Activator 2 is a potent apoptosis activator; increases procaspase-9 processing and subsequent caspase-3 activation.

Purity: 97.06%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
10 mg, 50 mg, 100 mg

Baohuoside I  (Icarin-II; Icariside-II)  Cat. No.: HY-N0011

Bioactivity: Baohuoside I (Icariside-II) is a component of Epimedium koreanum; a regulator of CXC4M expression as well as function in cervical cancer and breast cancer cells; Apoptosis inducer.

Purity: 98.96%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
10 mg, 50 mg

Betulin  (Trochol)  Cat. No.: HY-N0083

Bioactivity: Betulin (Trochol), is a sterol regulatory element-binding protein (SREBP) inhibitor with an IC50 of 14.5 μM in K562 cell line.

Purity: 98.0%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
50 mg, 100 mg, 200 mg

Betulinic acid  (Lupatic acid; Betulic acid)  Cat. No.: HY-10529

Bioactivity: Betulinic acid is a natural pentacyclic triterpenoid, acts as a eukaryotic topoisomerase I inhibitor, with an IC50 of 5 μM, and possesses anti-HIV, anti-malarial, anti-inflammatory and anti-tumor properties.

Purity: 98.58%
Clinical Data: Phase 2
Size: 10mM x 1mL in DMSO,
100 mg, 200 mg, 500 mg

Bisdemethoxycurcumin  (Curcumin III; Didemethoxycurcumin)  Cat. No.: HY-N0007

Bioactivity: Bisdemethoxycurcumin(Curcumin III; Didemethoxycurcumin) is a natural derivative of curcumin with anti-inflammatory and anti-cancer activities.

Purity: 98.00%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
10 mg, 50 mg, 100 mg

Cholesterol myristate  (Cholesteryl myristate; Cholesteryl tetradecanoate)  Cat. No.: HY-N2338

Bioactivity: Cholesterol myristate is a natural steroid present in traditional Chinese medicine.

Purity: 98.0%
Clinical Data: No Development Reported
Size: 250 mg

Chondroitin sulfate  (Chondroitin polysulfate)  Cat. No.: HY-B2162

Bioactivity: Chondroitin sulfate, one of five classes of glycosaminoglycans, has been widely used in the treatment of osteoarthritis. Chondroitin sulfate reduces inflammation mediators and the apoptotic process and is able to reduce protein production of inflammatory cytokines, iNOS and MMPs.

Purity: 95.40%
Clinical Data: Launched
Size: 250 mg, 1 g

Tel: 609-228-6898  Fax: 609-228-5909  Email: sales@medchemexpress.com
| **Cisplatin**  
*(CDDP; cis-Diaminodichloroplatinum)*  
Cat. No.: HY-17394 |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Bioactivity:</strong> Cisplatin is a potent inducer of growth arrest and/or <em>apoptosis</em> in most cell types.</td>
</tr>
</tbody>
</table>
| **Purity:** 99.0%  
**Clinical Data:** Launched  
**Size:** 5 mg, 10 mg  |

| **Citric acid**  
Cat. No.: HY-N1428 |
<table>
<thead>
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</thead>
<tbody>
<tr>
<td><strong>Bioactivity:</strong> Citric acid is a weak organic tricarboxylic acid found in citrus fruits. Citric acid is a natural preservative and food tartness enhancer.</td>
</tr>
</tbody>
</table>
| **Purity:** 98.0%  
**Clinical Data:** Launched  
**Size:** 10mM x 1mL in DMSO, 100 mg  |

| **Columbianadin**  
Cat. No.: HY-N0362 |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Bioactivity:</strong> Columbianadin, a natural coumarin from, is known to have various biological activities including anti-inflammatory and anti-cancer effects.</td>
</tr>
</tbody>
</table>
| **Purity:** 99.85%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 25 mg, 50 mg  |

| **Demethoxycurcumin**  
*(Curcumin II; Desmethoxycurcumin; Monod emethoxycurcumin)*  
Cat. No.: HY-N0006 |
<table>
<thead>
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<tbody>
<tr>
<td><strong>Bioactivity:</strong> Demethoxycurcumin(Curcumin II) is a major active curcuminoid; possess anti-inflammatory properties; also exert cytotoxic effects in human cancer cells via induction of apoptosis</td>
</tr>
</tbody>
</table>
| **Purity:** 99.09%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg  |

| **Ecteinascidin 770**  
*(Ecteinascididine 770; Et-770)*  
Cat. No.: HY-101191 |
<table>
<thead>
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<tbody>
<tr>
<td><strong>Bioactivity:</strong> Ecteinascidin 770 (ET-770) is a 1,2,3,4-tetrahydroisoquinoline alkaloid with potent anti-cancer activities; inhibits U373MG cells with an IC&lt;sub&gt;50&lt;/sub&gt; of 4.83 nM.</td>
</tr>
</tbody>
</table>
| **Purity:** 98.82%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 1 mg  |

| **Desacetylcinobufotalin**  
*(Deacetylcinobufotalin)*  
Cat. No.: HY-N0882 |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Bioactivity:</strong> Desacetylcinobufotalin is a natural compound; apoptosis inducer and shows the marked inhibition effect to HepG2 cells and the IC50 value is 0.0279μmol/ml.</td>
</tr>
</tbody>
</table>
| **Purity:** >98%  
**Clinical Data:** No Development Reported  
**Size:** 5 mg, 10 mg  |

| **Epibrassinolide**  
*(24-Epibrassinolide; B1105; BP55)*  
Cat. No.: HY-N0848 |
<table>
<thead>
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<tbody>
<tr>
<td><strong>Bioactivity:</strong> Epibrassinolide is a natural brassinosteroid (BR) derivative, is a plant regulator with a similar structure to mammalian steroids. Epibrassinolide is a potential <em>apoptotic inducer</em> in various cancer cells without affecting the non-tumor cell growth.</td>
</tr>
</tbody>
</table>
| **Purity:** 98.00%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg, 500 mg  |

| **Elesclomol**  
*(STA-4783)*  
Cat. No.: HY-12040 |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Bioactivity:</strong> Elesclomol is a novel potent oxidative stress inducer that elicits pro-apoptosis events among tumor cells.</td>
</tr>
</tbody>
</table>
| **Purity:** 99.80%  
**Clinical Data:** Phase 3  
**Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg  |

| **Ginsenoside Rg6**  
Cat. No.: HY-N0907 |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Bioactivity:</strong> Ginsenoside Rg6 is the component isolated from notoginseng. Ginsenoside Rg6 inhibits TNF-α-induced NF-κB transcriptional activity with an IC&lt;sub&gt;50&lt;/sub&gt; of 29.34±2.22 μM in HepG2 cells. Ginsenoside Rg6 also exhibits <em>apoptosis</em>-inducing effect.</td>
</tr>
</tbody>
</table>
| **Purity:** >98%  
**Clinical Data:** No Development Reported  
**Size:** 5 mg, 10 mg  |
<table>
<thead>
<tr>
<th>Compound</th>
<th>Bioactivity</th>
<th>Purity</th>
<th>Clinical Data</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ginsenoside Rh2</td>
<td>Ginsenoside Rh2 is isolated from the root of Ginseng. Ginsenoside Rh2 induces the activation of caspase-8 and caspase-9. Ginsenoside Rh2 induces cancer cell apoptosis in a multi-path manner.</td>
<td>98.0%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 5 mg, 10 mg</td>
</tr>
<tr>
<td>Ginsenoside Rh4</td>
<td>Ginsenoside Rh4 is a rare saponin obtained from Panax notoginseng. Ginsenoside Rh4 activates Bax, caspase 3, caspase 8, and caspase 9. Ginsenoside Rh4 also induces autophagy.</td>
<td>98.40%</td>
<td>No Development Reported</td>
<td>5 mg, 10 mg</td>
</tr>
<tr>
<td>Glycochenodeoxycholic acid</td>
<td>Glycochenodeoxycholic acid is a bile salt formed in the liver from Chenodeoxycholate and glycine, used to induce hepatocyte apoptosis in research.</td>
<td>98.0%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 10 mg</td>
</tr>
<tr>
<td>Iberin</td>
<td>Iberin, a sulfoxide analogue of sulforaphane, is a naturally occurring member of isothiocyanate family. It inhibits cell survival with an IC50 of 2.3 μM in HL60 cell.</td>
<td>98.00%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 2 mg</td>
</tr>
<tr>
<td>Isoalantolactone</td>
<td>Isoalantolactone is an apoptosis inducer, which also acts as an alkylating agent.</td>
<td>99.92%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 5 mg, 10 mg</td>
</tr>
<tr>
<td>Kinetin riboside</td>
<td>Kinetin riboside, a cytokinin analog, can induce apoptosis in cancer cells. It inhibits the proliferation of HCT-15 cells with an IC50 of 2.5 μM.</td>
<td>99.02%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 100 mg</td>
</tr>
<tr>
<td>Meisoindigo</td>
<td>Meisoindigo (Natura-α; N-Methylisoindigotin; Dian III), a derivative of Indigo naturalis, might induce apoptosis and myeloid differentiation of acute myeloid leukemia (AML).</td>
<td>96.46%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg</td>
</tr>
<tr>
<td>Methyl protodioscin</td>
<td>Methyl protodioscin (NSC-698790; Smilax saponin B) is a furostanol biglycoside with antitumor properties; shows to reduce proliferation, cause cell cycle arrest.</td>
<td>98.0%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 5 mg, 10 mg</td>
</tr>
<tr>
<td>Myricetin</td>
<td>Myricetin is a common plant-derived flavonoid with a wide range of activities including strong anti-oxidant, anticancer, anti-diabetic and anti-inflammatory activities.</td>
<td>99.41%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 50 mg, 100 mg, 200 mg, 500 mg</td>
</tr>
<tr>
<td>NSC348884</td>
<td>NSC348884 is a nucleosomin inhibitor disrupts oligomer formation and induces apoptosis, inhibits cell proliferation at an IC50 of 1.7-4.0 μM in distinct cancer cell lines.</td>
<td>99.92%</td>
<td>No Development Reported</td>
<td>10mM x 1mL in DMSO, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg</td>
</tr>
</tbody>
</table>
Osajin (CID 95168; NSC 21566)  Cat. No.: HY-N3125

Bioactivity: Osajin is the major bioactive isoflavone present in the fruit of *Maclura pomifera* with antitumor, antioxidant and anti-inflammatory activities.

Purity: >98%
Clinical Data: No Development Reported
Size: 5 mg

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Polydatin (Piceid)  Cat. No.: HY-N0120A

Bioactivity: Polydatin (Piceid), extracted from the roots of Polygonum cuspidatum Sieb, a widely used traditional Chinese remedies, possesses anti-inflammatory activity in several experimental models.

Purity: 98.42%
Clinical Data: Phase 2
Size: 10mM x 1mL in DMSO, 100 mg, 200 mg, 500 mg

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Sanguinarine chloride (Pseudochelethrynine chloride; Sanguina rium chloride)  Cat. No.: HY-N0052A

Bioactivity: Sanguinarine chloride, a benzophenanthridine alkaloid derived from the root of *Sanguinaria Canadensis*, can stimulate apoptosis via activating the production of reactive oxygen species (ROS). Sanguinarine-induced apoptosis is associated with the activation of JNK and NF-κB.

Purity: 96.10%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO, 5 mg, 10 mg

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SMIP004  Cat. No.: HY-15694

Bioactivity: SMIP004 is a novel inducer of cancer-cell selective apoptosis of human prostate cancer cells, it was found to downregulate SKP2 and to stabilize p27.

Purity: 98.11%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg

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Trabectedin (Ecteinascidin 743; ET-743; Ecteinascidin)  Cat. No.: HY-50936

Bioactivity: Trabectedin (Ecteinascidin-743 or ET-743) is a novel antitumor agent of marine origin with potent antitumour activity both in vitro and in vivo.

Purity: 99.83%
Clinical Data: Launched
Size: 1 mg

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Taurochenodeoxycholic acid (12-Deoxycholyltaurine)  Cat. No.: HY-N2027

Bioactivity: Taurochenodeoxycholic acid is one of the main bioactive substances of animals' bile acid.

Purity: 99.80%
Clinical Data: Launched
Size: 10mM x 1mL in DMSO, 50 mg

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Ubiquitin Isopeptidase Inhibitor I, G5 (NSC144303)  Cat. No.: HY-100738

Bioactivity: Ubiquitin Isopeptidase Inhibitor I, G5 (NSC 144303) is an apoptosis-independent caspase and apoptosis activator with IC50 values of 1.76 and 1.6 μM in E1A and E1A/C9DN cells, respectively.

Purity: 98.0%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg
**[6]-Gingerol**

((S)-(+)-[6]Gingerol; 6-Gingerol)  
Cat. No.: HY-14615

<table>
<thead>
<tr>
<th>Bioactivity:</th>
<th>[6]-Gingerol is an active compound isolated from Ginger (Zingiber officinale Rosc), exhibits a variety of biological activities including anticancer, anti-inflammation, and anti-oxidation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity:</td>
<td>98.01%</td>
</tr>
<tr>
<td>Clinical Data:</td>
<td>No Development Reported</td>
</tr>
<tr>
<td>Size:</td>
<td>10mM x 1mL in DMSO, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg</td>
</tr>
</tbody>
</table>