AMPK (AMP-activated protein kinase) is an enzyme that plays a role in cellular energy homeostasis. It consists of three proteins (subunits) that together make a functional enzyme. The net effect of AMPK activation is stimulation of hepatic fatty acid oxidation and ketogenesis, inhibition of cholesterol synthesis, lipogenesis, and triglyceride synthesis, inhibition of adipocyte lipolysis and lipogenesis, stimulation of skeletal muscle fatty acid oxidation and muscle glucose uptake, and modulation of insulin secretion by pancreatic beta-cells. AMPK acts as a metabolic master switch regulating several intracellular systems including the cellular uptake of glucose, the β-oxidation of fatty acids and the biogenesis of glucose transporter 4 (GLUT4) and mitochondria.
# AMPK Inhibitors & Modulators

## 7-Methoxyisoflavone

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>7-Methoxyisoflavone is an isoflavone derivative and also an activator of adenosine monophosphate-activated protein kinase (AMPK).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>99.81%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>No Development Reported</td>
</tr>
<tr>
<td>Size</td>
<td>10mM x 1mL in DMSO, 100 mg</td>
</tr>
</tbody>
</table>

## A-769662

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>A-769662 is a potent, reversible AMPK activator with EC&lt;sub&gt;50&lt;/sub&gt; of 0.8 μM, and has little effect on GPPase/FBPase activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>98.09%</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, 50 mg, 100 mg</td>
</tr>
</tbody>
</table>

## AICAR (Acadesine; AICA Riboside)

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>AICAR is a cell-permeable AMP-activated protein kinase (AMPK) activator.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>99.92%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Size</td>
<td>10mM x 1mL in Water, 50 mg, 100 mg, 200 mg, 500 mg</td>
</tr>
</tbody>
</table>

## AICAR phosphate (Acadesine phosphate; AICA Riboside phosphate)

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>AICAR phosphate is an activator of AMP-activated protein kinase (AMPK), down-regulates the insulin receptor expression in HepG2 cells.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>98.0%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Size</td>
<td>10mM x 1mL in Water, 50 mg, 100 mg, 200 mg, 500 mg</td>
</tr>
</tbody>
</table>

## AMPK activator 1

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>AMPK activator 1 is an AMPK activator extracted from patent WO2013116491A1, compound No.1-75, has an EC&lt;sub&gt;50&lt;/sub&gt; of &lt;0.1μM.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>98.0%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>No Development Reported</td>
</tr>
<tr>
<td>Size</td>
<td>1 mg, 5 mg, 10 mg, 20 mg</td>
</tr>
</tbody>
</table>

## Ampkinone

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>Ampkinone is an indirect AMP-activated protein kinase (AMPK) activator.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>99.31%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>No Development Reported</td>
</tr>
<tr>
<td>Size</td>
<td>10mM x 1mL in DMSO, 2 mg, 5 mg, 10 mg</td>
</tr>
</tbody>
</table>

## Chitosan oligosaccharide COS

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>Chitosan oligosaccharide (COS) is an oligomer of β-(1-4)-linked D-glucosamine. Chitosan oligosaccharide (COS) activates AMPK and inhibits inflammatory signaling pathways including NF-κB and MAPK pathways.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>91.0%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>No Development Reported</td>
</tr>
<tr>
<td>Size</td>
<td>1 g, 5 g</td>
</tr>
</tbody>
</table>

## Danthron (Danthron; Chrysazin; 1,8-Dihydroxyanthraquinone)

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>Danthron is a natural product extracted from the traditional Chinese medicine rhubarb. Danthron functions in regulating glucose and lipid metabolism by activating AMPK.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>98.0%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>Launched</td>
</tr>
<tr>
<td>Size</td>
<td>10mM x 1mL in DMSO, 100 mg</td>
</tr>
</tbody>
</table>

## Dorsomorphin (BML-275; Compound C)

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>Dorsomorphin is a potent and selective AMPK inhibitor, that is competitive with ATP, with K&lt;sub&gt;i&lt;/sub&gt;=129±16 nM in the absence of AMP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>99.32%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>Phase 1</td>
</tr>
<tr>
<td>Size</td>
<td>5 mg, 10 mg, 50 mg, 100 mg</td>
</tr>
</tbody>
</table>

## Dorsomorphin dihydrochloride (BML-275 dihydrochloride; Compound C dihydrochloride)

<table>
<thead>
<tr>
<th>Bioactivity</th>
<th>Dorsomorphin dihydrochloride (BML-275 dihydrochloride) is a potent, selective and ATP-competitive AMPK inhibitor, with a K&lt;sub&gt;i&lt;/sub&gt; of 109±16 nM.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>99.73%</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>No Development Reported</td>
</tr>
<tr>
<td>Size</td>
<td>10mM x 1mL in Water, 5 mg, 10 mg, 50 mg, 100 mg</td>
</tr>
</tbody>
</table>
ETC-1002
(ESP-55016; Bempedoic acid)
Cat. No.: HY-12357

Bioactivity: ETC-1002 is an activator of hepatic AMP-activated protein kinase (AMPK).

Purity: 98.0%
Clinical Data: Phase 3
Size: 10mM x 1mL in DMSO,
5 mg, 10 mg, 50 mg, 100 mg

Flufenamic acid
Cat. No.: HY-B1221

Bioactivity: Flufenamic acid is a non-steroidal anti-inflammatory agent, inhibits cyclooxygenase (COX), activates AMPK, and also modulates ion channels, blocking chloride channels and L-type Ca2+ channels, modulating non-selective cation channel...

Purity: 99.92%
Clinical Data: Launched
Size: 10mM x 1mL in DMSO,
100 mg

Ginkgolide C
(BN-52022; Ginkgolide-C)
Cat. No.: HY-N0785

Bioactivity: Ginkgolide C is a flavone isolated from Ginkgo biloba leaves, possessing multiple biological functions, such as decreasing platelet aggregation and ameliorating Alzheimer disease.

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

HTH-01-015
Cat. No.: HY-12334

Bioactivity: HTH-01-015 is a selective NUAK1 inhibitor (IC50 is 100 nM). HTH-01-015 inhibits NUAK1 with >100-fold higher potency than NUAK2 (IC50 of >10 μM).

Purity: 98.81%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
5 mg, 10 mg, 50 mg, 100 mg

Metformin hydrochloride
(1,1-Dimethylbiguanide hydrochloride)
Cat. No.: HY-17471A

Bioactivity: Metformin (hydrochloride) is an FDA approved first-line drug for the treatment of type 2 diabetes. Metformin decreases hepatic glucose production, mostly through a mild and transient inhibition of the mitochondrial respiratory-chain complex 1.

Purity: 99.98%
Clinical Data: Launched
Size: 10mM x 1mL in Water,
10 g, 50 g

MK-3903
Cat. No.: HY-107988

Bioactivity: MK-3903 is a potent and selective AMP-activated protein kinase (AMPK) activator with an EC50 of 8 nM.

Purity: 98.10%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
1 mg, 5 mg, 10 mg, 50 mg, 100 mg

MK8722
Cat. No.: HY-111363

Bioactivity: MK8722 is a potent and systemic pan-AMPK activator.

Purity: >98%
Clinical Data: No Development Reported
Size: 250 mg, 500 mg

O-304
Cat. No.: HY-112233

Bioactivity: O-304 is a small molecule AMPK activator.

Purity: 98.63%
Clinical Data: No Development Reported
Size: 10mM x 1mL in DMSO,
5 mg, 10 mg, 25 mg, 50 mg, 100 mg

Palmitelaidic Acid
(9-trans-Hexadecenoic acid; trans-Palmtoleic acid)
Cat. No.: HY-N2341

Bioactivity: Palmitelaidic acid is the trans isomer of palmtoleic acid. Palmtoleic acid is one of the most abundant fatty acids in serum and tissue.

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

PF-06409577
Cat. No.: HY-103683

Bioactivity: PF-06409577 is a potent and selective allosteric activator of AMPK α1β1γ1 isoform with an EC50 of 7 nM.

Purity: 98.56%
Clinical Data: Phase 1
Size: 10mM x 1mL in DMSO,
5 mg, 10 mg, 25 mg, 50 mg, 100 mg
**Phenformin hydrochloride**  
(Phenethylbiguanide hydrochloride)  
Cat. No.: HY-16397A  
**Bioactivity:** Phenformin (hydrochloride) is a hydrochloride salt of phenformin that is an anti-diabetic drug from the biguanide class, can activate **AMPK** activity.  
**Purity:** 98.17%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 1 g, 5 g

**SAMS**  
Cat. No.: HY-P0136  
**Purity:** >98%  
**Clinical Data:** No Development Reported  
**Size:** 1 mg, 5 mg, 10 mg

**WZ4003**  
Cat. No.: HY-15802  
**Bioactivity:** WZ4003 is the first potent and highly specific NUAK kinase inhibitor with **IC_{50}** of 20 nM/100 nM for NUAK1/NUAK2, without significant inhibition on other 139 kinases.  
**Purity:** 97.26%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 5 mg, 50 mg

**YLF-466D**  
(C24)  
Cat. No.: HY-15840  
**Bioactivity:** YLF-466D is a newly developed AMPK activator, which inhibits platelet aggregation.  
**Purity:** 99.16%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg, 100 mg

**ZLN024**  
Cat. No.: HY-16708  
**Bioactivity:** ZLN024 is an AMPK allosteric activator. ZLN024 directly activates recombinant AMPK α1β1γ1, AMPK α2β1γ1, AMPK α1β2γ1 and AMPK α2β2γ1 heterotrimer with **EC_{50}**s of 0.42 µM, 0.95 µM, 1.1 µM and 0.13 µM, respectively.  
**Purity:** >98%  
**Clinical Data:** No Development Reported  
**Size:** 5 mg, 10 mg, 50 mg

**ZLN024 hydrochloride**  
Cat. No.: HY-16708A  
**Bioactivity:** ZLN024 hydrochloride is an AMPK allosteric activator. ZLN024 directly activates recombinant AMPK α1β1γ1, AMPK α2β1γ1, AMPK α1β2γ1 and AMPK α2β2γ1 heterotrimer with **EC_{50}**s of 0.42 µM, 0.95 µM, 1.1 µM and 0.13 µM, respectively.  
**Purity:** 98.55%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 50 mg

**[6]-Gingerol**  
((S)-(+-)[6]Gingerol; 6-Gingerol)  
Cat. No.: HY-14615  
**Bioactivity:** [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.  
**Purity:** 98.01%  
**Clinical Data:** No Development Reported  
**Size:** 10mM x 1mL in DMSO, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg