## Irbesartan (Avapro) Datasheet

### Technical Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight (MW)</td>
<td>428.53</td>
</tr>
<tr>
<td>Formula</td>
<td>C_{23}H_{22}N_{6}O</td>
</tr>
<tr>
<td>CAS No.</td>
<td>138402-11-6</td>
</tr>
<tr>
<td>Synonyms</td>
<td>BMS-186295, SR-47436</td>
</tr>
<tr>
<td>Solubility (25°C)</td>
<td>DMSO 86 mg/mL, Water &lt;1 mg/mL, Ethanol 8 mg/mL</td>
</tr>
<tr>
<td>Storage</td>
<td>2 years, -20°C, Powder, 2 weeks, 4°C in DMSO, 6 months, -80°C in DMSO</td>
</tr>
</tbody>
</table>

### Biological Activity

#### Description
Irbesartan (Avapro, SR-47436, BMS-186295) is a highly potent and specific *angiotensin II type 1* (AT1) receptor antagonist with IC50 of 1.3 nM.

#### Targets
AT1

#### IC50
1.3 nM

#### In vitro
Irbesartan competes with *angiotensin II* (AII) for binding at the AT1 receptor subtype and antagonizes AII-induced contraction in rabbit aorta ring with IC50 of 4 nM. Irbesartan has no affinity for AT2 receptors. (1) Irbesartan (10 μM) blocks *angiotensin II* induced increase in α1, β1, β2, and β3 integrins, osteopontin, and α-actinin mRNA and protein levels in rat cardiac fibroblasts, leading to the decrease of cell attachment to extracellular matrix (ECM) proteins. (2) In vitro treatment markedly induces the expression of the adipogenic marker gene adipose protein 2 (apo2) in 3T3-L1 cells in a concentration-dependent manner with EC50 of 3.5 μM and 3.3-fold induction at the concentration of 10 μM. Irbesartan (10 μM) markedly induces transcriptional activity of the peroxisome proliferator-activated receptor-γ (PPARγ) by 3.4-fold independent of its AT1 receptor blocking action. (3) Pretreatment with Irbesartan (~10 μM) decreases *angiotensin II*-induced apoptosis in rat vascular smooth muscle cells by blocking *angiotensin II* internalization in a concentration-dependent manner. (4)

#### In vivo
Oral administration of Irbesartan (1 mg/kg) reduces *angiotensin II* (AII)-induced hypertension, equivalent to losartan in conscious normotensive rats, markedly more active than losartan (10 mg/kg) in normotensive cynomolgus monkeys. (1) Administration of Irbesartan (7 mg/kg/day) significantly prevents skeletal muscle apoptosis and muscle atrophy in rats with monocrotaline-induced congestive heart failure (CHF), which is involved with the decrease of TNFα level and attributed to AT1 receptor blocking. (5)

#### Clinical Trials
A Phase I study to evaluate pharmacokinetics and safety after oral administration of Irbesartan and atorvastatin in combination as HCP0912 in healthy male subjects has been completed.

#### Features
Irbesartan is a longer acting AT1 receptor antagonist than losartan and valsartan.

### Protocol (Only for Reference)

#### Kinase Assay

**Angiotensin II Binding Study on Rat Liver Membranes**

The plasma membranes of livers are purified from male Sprague-Dawley rats, and diluted in the incubation buffer (20 mM Tris-HCl, 10 mM MgCl₂, 2 g/L RSA, 145 mg/L bacitracin, pH 7.5). Aliquots of membrane suspension (20-330 μg protein/assay) are incubated for 1 hour at 25 °C with [125I]*angiotensin II* (AII) and various concentrations of Irbesartan in 200 μL of incubation buffer. The incubation is stopped by rapid filtration through a Whatman GF/B filter followed by three consecutive washing in 5 mL of cold incubation buffer (the GF/B filters are preincubated for 1 hour in the incubation buffer). The radioactivity bound to the filter is counted in a γ counter. Specific binding is defined as the difference between total binding and the binding in the presence of 1 μM unlabeled *angiotensin II* (All). The concentration of Irbesartan producing 50% inhibition (IC50) of radioligand binding is determined from competition curve.

#### Animal Study

**Animal Models**

Male Sprague-Dawley rats and female cynomolgus monkeys (Macaca fascicularis) injected (iv) with *angiotensin II* (AII)

**Formulation**

Dissolved in water by neutralization with a stoichiometric equivalent of KOH, or dissolved in saline by neutralization with a stoichiometric equivalent of L-arginine

**Doses**

1 mg/kg

**Administration**

Oral gavage

### References

Specific storage and handling information for each product is indicated on the product datasheet. Most Selleck products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality, but save your shipping charges by using the most economical storage conditions for an overnight shipment. Upon receipt of the product, follow the storage recommendations on the product datasheet.