# Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name:</strong></td>
<td>Istaroxime hydrochloride</td>
</tr>
<tr>
<td><strong>Cas No.:</strong></td>
<td>374559-48-5</td>
</tr>
<tr>
<td><strong>M.Wt:</strong></td>
<td>396.95</td>
</tr>
<tr>
<td><strong>Formula:</strong></td>
<td>C21H33ClN2O3</td>
</tr>
<tr>
<td><strong>Synonyms:</strong></td>
<td>PST-2744 (hydrochloride); PST 2744 (hydrochloride); PST2744 (hydrochloride)</td>
</tr>
<tr>
<td><strong>Chemical Name:</strong></td>
<td>(5S,8R,9S,10R,13S,14S)-3-(2-aminoethoxyimino)-10,13-dimethyl-1,2,4,5,7,8,9,11,12,14,15,16-dodecahydrocyclopenta[a]phenanthrene-6,17-dione;hydrochloride</td>
</tr>
<tr>
<td><strong>Canonical SMILES:</strong></td>
<td>CC12CCC(=NOCCN)CC1C(=O)CC3C2CCC4(C3CCC4=O)C.Cl</td>
</tr>
<tr>
<td><strong>Solubility:</strong></td>
<td>Soluble in DMSO</td>
</tr>
<tr>
<td><strong>Storage:</strong></td>
<td>Store at -20°C</td>
</tr>
<tr>
<td><strong>General tips:</strong></td>
<td>For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.</td>
</tr>
</tbody>
</table>
| **Shopping Condition:** | Evaluation sample solution: ship with blue ice  
All other available size: ship with RT, or blue ice upon request |

# Biological Activity

**Targets:** Membrane Transporter/Ion Channel  
**Pathways:** ATPase  
**Description:**  
Istaroxime hydrochloride (PST2744) is a novel inhibitor of Na+/K+-ATPase with IC50 value of 0.43±0.15μM [1].  
In vitro studies show that Istaroxime can inhibit the activity of Na+/K+-ATPase from dog kidney.
without significant interaction with other several receptors. It demonstrates the selectivity of Istaroxime. Ex vivo studies show the inotropic effect can be achieved up to 60% for Istaroxime. Istaroxime can also increase the force of contraction of guinea pig paced left atria in the range 0.3 to 30μM. In vivo assays prove Istaroxime is consistently safer than digoxin [1].

Istaroxime is a steroidal drug unrelated to cardiac glycosides that improves cellular calcium cycling. The inhibition of Na+/K+-ATPase induces cytosolic calcium accumulation during systole (inotropism). Clinical studies has been done with istaroxime in phase II. Istaroxime could be a promising alternative for patients with acute heart failure syndrome for whom the therapeutic options are currently limited [2].

Reference:

Protocol

Cell experiment:

- **Cell lines**: Guinea pig ventricular myocytes
- **Preparation method**: The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37 °C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.
- **Reacting conditions**: 4 μM, 0.5 s
- **Applications**: Resting Ca2+ was similarly increased by istaroxime (from 61.3 to 92.4 nM). Istaroxime increased [Ca]SR-tot by 47%. Istaroxime increased the amount of Ca2+ extruded by the Na+/Ca2+ exchanger (CaNCX) during caffeine-induced transients (+130). Istaroxime shortened the time elapsing between the start of the caffeine pulse and SR Ca2+ release.

Animal experiment [3]:

- **Animal models**: Bio TO.2 hamsters and Bio F1B hamsters
- **Dosage form**: Oral administration, 30 mg/5 mL/kg/day
- **Applications**: Heart function of istaroxime-treated hamsters was comparable to
that of healthy animals, and had a significantly higher LVSP and both positive and negative dP/dT when compared with that of vehicle-treated animals. Coronary flow rate in hearts isolated from istaroxime-treated hamsters was higher than that from vehicle-treated Bio TO.2 animals. Besides that, Bio TO.2 hamsters treated with istaroxime had both time and frequency domain indexes of HRV, i.e. standard deviation of R-R intervals, TP, LF and HF, augmented with respect to vehicle-treated animals. Moreover, the LF/HF ratio of istaroxime-treated animals was similar to that observed in Bio F1B hamsters.

Other notes

Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

Reference:

Caution

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Short-term storage of 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 of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.

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