

## 5. How do I dissolve the products in my Tocriset™?

This Tocriset™ contains high purity ligands that have been pre-dissolved to a convenient stock concentration of 10 mM in 0.5 ml of DMSO. The stock solutions can be diluted for instant use in your experiments.

The solubility data provided is accurate to the best of Tocris' knowledge.

Phosphodiesterase Inhibitor Tocriset™  
Solubility Chart

	Pre-dissolved in DMSO at a concentration of 10 mM in 0.5 ml.	Pre-dissolved in DMSO at a concentration of 10 mM in 0.5 ml.	Pre-dissolved in DMSO at a concentration of 10 mM in 0.5 ml.	Pre-dissolved in DMSO at a concentration of 10 mM in 0.5 ml.	Pre-dissolved in DMSO at a concentration of 10 mM in 0.5 ml.
Cilostamide					
Milrinone					
Ro 20-1724					
(R)-(-)-Rolipram					
Zardaverine					

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## 1. What is a Tocriset™?

A Tocriset™ is a ligand set designed with you, the Life Science Researcher, in mind. A Tocriset™ provides a convenient and user-friendly experimental aid by presenting you with a choice of high purity, miniaturised catalogue ligands as lyophilised solids or, where necessary, ligands pre-dissolved in DMSO. By following simple solubility instructions, the compounds can be diluted with ease and are ready for use in your experiments enabling you to investigate the binding properties of a cell surface receptor or to evaluate the properties of a signal transduction pathway.

## 2. What does my Tocriset™ contain?

The **Phosphodiesterase Inhibitor Tocriset™ (Cat. No. 1881)** contains the following compounds:

- Cilostamide**; selective inhibitor of PDE3
- Milrinone**; potent inhibitor of PDE3
- Ro 20-1724**; widely used inhibitor, selective for PDE4
- (R)-(-)-Rolipram**; selective inhibitor of PDE4
- Zardaverine**; selective inhibitor of PDE3 and PDE4

Product information, including biological description and references for each compound, can be found in the product descriptions overleaf.

## 6. Tocriset™ Product Specifications

### Phosphodiesterase Inhibitor Tocriset™ (Cat. No. 1881)

#### Tocriset™ Batch No: 2

Product	Cat. No.	Batch No.
<b>Cilostamide</b>	0915	2B
<b>Milrinone</b>	1504	1A
<b>Ro 20-1724</b>	0415	3A
<b>(R)-(-)-Rolipram</b>	1349	10A
<b>Zardaverine</b>	1046	3A

The products included in this Tocriset™ are also available in larger quantities and details can be found on the Tocris website, [www.tocris.com](http://www.tocris.com). If you require any more technical information about this Tocriset™, please contact Technical Support (Section 7).

If you have any comments or suggestions about this Tocriset™, or the Tocriset™ product range, please do not hesitate to contact the Tocris Customers Service Department:

**Europe and Rest of the World**  
customerservice@tocris.co.uk

**United States**  
customerservice@tocrisusa.com

## 3. What are the storage conditions for my Tocriset™?

Information concerning product stability, particularly in solution, has rarely been reported and, in most cases, Tocris can only offer a general guide. The compounds in this Tocriset™ are supplied pre-dissolved as DMSO stock solutions and can be stored for up to 6 months provided that the vial remains unopened. Compound solubility in DMSO is sometimes not uniform and the customer is advised to re-suspend compounds that may settle prior to transfer. Tocris recommends that the stock solutions are stored as aliquots in tightly sealed vials at -20°C. Wherever possible, working solutions should be made up and used on the same day. Before use, and prior to opening a vial, it is recommended that the product be allowed to equilibrate to room temperature for at least 60 minutes.

## 4. What is the purity of the products in my Tocriset™?

Tocriset™ products are of high purity, typically > 98%. Each product in this Tocriset™ has an individual batch number (Section 6), and purity data relating to the batch number can be found on the Tocris website, [www.tocris.com](http://www.tocris.com).

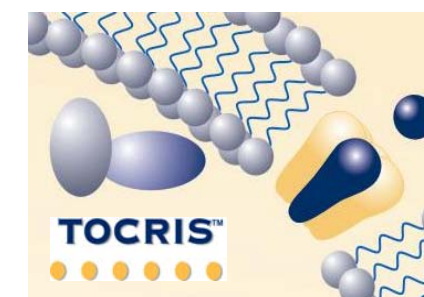
## 7. Tocris Technical Support Information

### United Kingdom

Tel: + 44 (0)117 916 3333  
Fax: + 44 (0)117 916 3344  
E-mail: [technicalsupport@tocris.co.uk](mailto:technicalsupport@tocris.co.uk)

### United States

Tel: (800) 421-3701/(636) 207-7651  
Fax: (800) 483-1993/(636) 207-7683  
E-mail: [technicalsupport@tocrisusa.com](mailto:technicalsupport@tocrisusa.com)



**Phosphodiesterase inhibitor, selective for PDE3 and 4 (IC50 values are 0.5 and 0.8 µM respectively).**

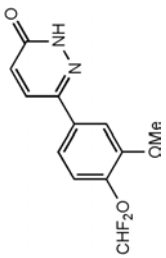
Tocris Cat. No: 1046

Structural Molecular Weight: 268.22

Structural Molecular Formula: C<sub>12</sub>H<sub>10</sub>F<sub>2</sub>N<sub>2</sub>O<sub>3</sub>

Registry No: [101975-10-4]

Storage of solid: Store at -20°C



**References:** Kilian *et al* (1989) Is phosphodiesterase inhibition a relevant bronchospasmolytic principle? Agents Actions Suppl. **28** 331.  
**Galvan and Schudt** (1990) Actions of the phosphodiesterase inhibitor zardaverine on guinea pig ventricular muscle. Naunyn-Schmied.Arch.Pharmacol. **342** 221.

**Selective inhibitor of type III phosphodiesterase (IC50 = 70 nM).**

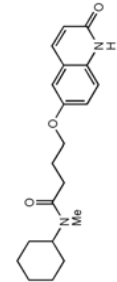
Tocris Cat. No: 0915

Structural Molecular Weight: 342.44

Structural Molecular Formula: C<sub>20</sub>H<sub>26</sub>N<sub>2</sub>O<sub>3</sub>

Registry No: [68550-75-4]

Storage of solid: Store at -20°C



**References:** Christensen and Torphy (1994) Isoenzyme-selective phosphodiesterase inhibitors as antiasthmatic agents. Ann.Rep.Med.Chem. **29** 185.  
**Pan *et al*** (1994) Synergistic interactions between selective pharmacological inhibitors of phosphodiesterase isozyme families PDE III and PDE IV to attenuate proliferation of rat vascular smooth muscle cells. Biochem.Pharmacol. **48** 827.  
**Tang *et al*** (1994) Photoaffinity labelling of cyclic GMP-inhibited phosphodiesterase (PDE III) in human and rat platelets and rat tissues: effects of phosphodiesterase inhibitors. Eur.J.Pharmacol. **268** 105.

**9. Material Safety Data Sheet (MSDS) Information**

The following information is applicable to the products in this Tocriset™.

**i. HAZARDS IDENTIFICATION**

To the best of our knowledge, the toxicological properties have not been fully investigated. May be harmful if inhaled, swallowed or absorbed through skin. All research chemicals should be regarded as potentially neurotoxic and must be handled with extreme care.

**ii. FIRST-AID MEASURES**

In all cases, of exposure, OBTAIN MEDICAL ADVICE IMMEDIATELY.

**In cases of SKIN CONTACT:**  
 Wash with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes and wash before wearing. In case of eye contact, flush with copious amounts of water for at least 15 minutes.

**In cases of INHALATION:**  
 Remove to fresh air and monitor breathing. If breathing becomes difficult give oxygen. If breathing stops, give artificial respiration.

**In cases of INGESTION:**  
 If swallowed, rinse mouth out with water and call a physician.

**iii. FIRE-FIGHTING MEASURES/ACCIDENTAL RELEASE MEASURES**

Extinguishing Media: Material is non-combustible. Use extinguishing media appropriate to surrounding fire conditions. May emit toxic gases upon thermal decomposition.

Unusual Fire and Explosive Hazards: Wear protective clothing to prevent contact with skin and eyes.

Special Fire Fighting Procedures:

Wear protective clothing to prevent contact with skin and eyes. Sweep up solid and place in an appropriate container. Avoid raising dust. Hold for appropriate disposal as described under Section vii. Decontaminate spill site with 10% caustic solution and ventilate area after pick-up is complete.

**iv. HANDLING AND STORAGE/EXPOSURE CONTROLS/PERSONAL PROTECTION**

Wear appropriate protective clothing and face wear to prevent contact with skin and eyes. Use only in a chemical fume hood, with air supplied by an independent system. Store in a cool dry place out of direct sunlight. Laboratory should be equipped with a safety shower and an eye-wash station. Avoid prolonged or repeated exposure. Do not breathe dust. Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.

**Potent cAMP phosphodiesterase inhibitor (IC50 = 56 nM for inhibition of PDE III). Has inotropic and vasodilator effects following oral or intravenous administration in vivo.**

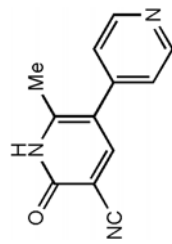
Tocris Cat. No: 1504

Structural Molecular Weight: 211.22

Structural Molecular Formula: C<sub>12</sub>H<sub>9</sub>N<sub>3</sub>O

Registry No: [78415-72-2]

Storage of solid: Store at -20°C



**References:** Alousi *et al* (1983) Characterization of the cardiotonic effects of milrinone, a new and potent cardiac bipyridine, on isolated tissues from several animal species. J.Cardiovasc.Pharmacol. **5** 804.  
**Shahid *et al*** (1991) The presence of five cyclic nucleotide phosphodiesterase isoenzyme activities in bovine tracheal smooth muscle and the functional effects of selective inhibitors. Br.J.Pharmacol. **104** 471.  
**Tang *et al*** (1994) Photoaffinity labelling of cyclic GMP-inhibited phosphodiesterase (PDE III) in human and rat platelets and rat tissues: effects of phosphodiesterase inhibitors. Eur.J.Pharmacol. **268** 105.

**Widely used inhibitor of cyclic nucleotide phosphodiesterase, selective for PDE4 (IC50 = 2.0 µM).**

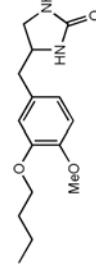
Tocris Cat. No: 0415

Structural Molecular Weight: 278.35

Structural Molecular Formula: C<sub>15</sub>H<sub>22</sub>N<sub>2</sub>O<sub>3</sub>

Registry No: [29925-17-5]

Storage of solid: Store at -20°C



**References:** Reeves *et al* (1987) The identification of a new cyclic nucleotide phosphodiesterase activity in human and guinea-pig cardiac ventricle. Biochem.J. **241** 535.  
**Nicholson *et al*** (1991) Differential modulation of tissue function and therapeutic potential of selective inhibitors of cyclic nucleotide phosphodiesterase isoenzymes. TIPS **12** 19.  
**Soderling *et al*** (1998) Cloning and characterization of a cAMP-specific cyclic nucleotide phosphodiesterase. Proc.Natl.Acad.Sci. **95** 8991.

**v. STABILITY AND REACTIVITY**

Stability: Stable under normal handling conditions.  
 Conditions to Avoid: N/A  
 Hazardous Combustion or Decomposition: May emit toxic gases such as carbon dioxide, carbon monoxide and nitrogen oxides upon thermal decomposition.

**vi. TOXICOLOGICAL INFORMATION**

To the best of our knowledge the chemical, physical and toxicological properties have not been fully investigated. May be harmful if inhaled, swallowed or absorbed through skin. All research chemicals should be regarded as potentially neurotoxic and must be handled with extreme care.

RTECS: May exist for some products supplied in this Tocriset™.  
 Toxicity Data: May exist for some products supplied in this Tocriset™.

**vii. DISPOSAL CONDITIONS/ECOLOGICAL INFORMATION**

As country, federal, state and local environment regulations are varied and change frequently, we recommend that you contact your local Department for Health Services for information on the disposal of products in this Tocriset™. Treat as potentially toxic if released into the environment.

**viii. TRANSPORT CONDITIONS**

Products contained in this Tocriset™ are believed safe for transport.

**ix. REGULATORY INFORMATION**

Classification: **CAUTION: SUBSTANCE NOT YET FULLY TESTED; TREAT AS TOXIC**  
 Risk Phrases: R36/37/38 – Irritating to eyes, respiratory system and skin.  
 Safety Phrases: S22 – Do not breath dust.  
 S24/25 – Avoid contact with skin and eyes.  
 S36/37/38 – Wear suitable protective clothing, gloves and eye/face protection.  
 S45 – In case of accident of if you feel unwell, seek medical advice immediately (show the label where possible).

**x. OTHER INFORMATION**

Material should be handled by qualified experienced professionals only. The above information is believed to be correct but does not purport to be all inclusive and should be used as a guide only for experienced personnel. Always consult your safety adviser and follow local and national safety legislature. The absence of warning must not, under any circumstance, be taken that no hazard exists. Further MSDS information on individual products contained within this Tocriset™ are available from the Tocris website, [www.tocris.com](http://www.tocris.com), or via Tocris Technical Support (see Section 7).

**More active enantiomer of the PDE4 inhibitor rolipram (Cat. No. 0905); 2-10-fold more potent than the S-(+) enantiomer (Cat. No. 1350).**

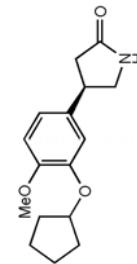
Tocris Cat. No: 1349

Structural Molecular Weight: 275.35

Structural Molecular Formula: C<sub>18</sub>H<sub>16</sub>N<sub>6</sub>S<sub>2</sub>

Registry No: [85416-75-7]

Storage of solid: Store at -20°C



**References:** Schneider *et al* (1986) Stereospecific binding of the antidepressant rolipram to brain protein structures. Eur.J.Pharmacol. **127** 105.  
**Owens *et al*** (1997) Human phosphodiesterase 4A: characterization of full-length and truncated enzymes expressed in COS cells. Biochem.J. **326** 53.  
**Ohawa *et al*** (1998) Inhibitory effects of rolipram on partially purified phosphodiesterase 4 from rat brains. Jpn.J.Pharmacol. **77** 147.

THE PRODUCT INFORMATION CONTAINED IN THIS BOOKLET IS CORRECT AT TIME OF PRINT. THE PHARMACOLOGICAL DATA PROVIDED IS INTENDED AS A GUIDE ONLY. CUSTOMERS ARE ADVISED TO CONSULT THE CITED SCIENTIFIC PUBLICATIONS, IN ADDITION TO CARRYING OUT THEIR OWN LITERATURE SEARCHES, FOR FULL BIOLOGICAL AND PHARMACOLOGICAL INFORMATION RELATING TO A PARTICULAR PRODUCT.