Chemical Safety Practices Recommendations

Rapamycin (Sirolimus)

Exposure Hazards (1)

- Germ Cell Mutagenicity
- Suspected of Causing Genetic Defects
- Toxic to Reproduction
- Suspected of Damaging Fertility or the Unborn Child
- Causes Damage to Immune System and Hematopoietic system (2)

Response to Exposure

<table>
<thead>
<tr>
<th>Oral</th>
<th>Dermal</th>
<th>Inhalation</th>
<th>Injection</th>
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<tbody>
<tr>
<td>Rinse mouth; do not induce vomiting. Report to OHS.</td>
<td>Wash skin with soap and water for 15 minutes. Rinse eyes for 15 minutes. Report to OHS.</td>
<td>Leave area; go to clean air. Report to OHS.</td>
<td>Report to OHS.</td>
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</table>

Special Precautions

- Pregnant women should be extra cautious when working with Rapamycin. (3)
- Liver damage or disease may increase the effects of Rapamycin. (4)
- Discard garments as hazardous if contaminated with Rapamycin.

Personal Protective Equipment

- Gloves (Double glove) (Latex or Nitrile)
- Skin Protection (Suit or Scrubs or Lab Coat)
- Eye Protection (Safety-glasses or Goggles)
- Closed-toe shoes
- Use N100 respirator if engineering controls are not available.

Engineering Controls

- Rapamycin powder- Chemical Fume Hood (CFH) (5)
- Rapamycin solution- CFH or Biosafety Cabinet (Class II, B2 BSC if aerosolized)
- Animal waste and bedding- No Special Precautions

Animal Handling

- No Special Precautions. (4, 6)

Bedding Disposal

- No Special Precautions.

Work Practices

- Dispose of unused Rapamycin as medical waste.

References:


Questions or concerns: Please contact EHS, Ted Witte, theodore.witte@nih.gov or 301-846-5860
Reviewed 04/14/2015 These recommendations are not final and may be updated.
Rapamycin is an immunosuppresant drug used to prevent organ transplant rejection. Rapamycin binds to ‘FK Binding Protein-12’ and prevents T-Lymphocyte activation/proliferation and antibody production. It is also an inhibitor of mTOR and causes cells to pause in their growth cycle before replicating DNA, and so is used as a cytostatic agent. The suppression of the immune system by Rapamycin has also been shown to slightly increase the risk of developing various malignancies.

Chronic exposure may cause susceptibility to infection, embryo toxicity and/or metabolic disorders, reversible testicular damage, and various abnormalities in blood composition. Rapamycin accumulates in the fetus to higher levels than are present in the maternal blood.

Rapamycin is rapidly metabolized by CYP3A4, which is present in both the liver and the intestines. In humans virtually no active Rapamycin is excreted in the urine or feces. The intestinal metabolism of Rapamycin in rodents is similar and little to no drug will be excreted in their waste.