

**Suggested Dosages/Precautions/Adverse Effects**

Labeled dose for *LymDyp*®: Shake well; dilute 4 oz. in one gal of water. Apply as a rinse or dip at 5–7 day intervals. Do not rinse. For more chronic or resistant cases, may be used at 8 oz per gallon.

Labeled dose for *LimePlus Dip*®: Pour 4 ounces of contents into a gallon container and fill with water. Mix well. Bathe animal prior to application. Rinse off shampoo. Pour entire contents of diluted *LimePlus Dip*® onto pet and work into skin. Allow to dry on the animal. Do not rinse. May be applied at 5 to 7 day intervals.

When used for dermatophytosis, twice weekly treatments have been recommend, if patients can tolerate the treatment's irritating effects.

Avoid contact with eyes. Can stain porous surface (e.g., concrete, porcelain) or permanently discolor jewelry. Clients should wear gloves and protect skin and eyes from solution. Application should be performed in a well-ventilated area or clients should wear a protective (respirator-type) mask.

While reasonably non-toxic, lime sulfur may cause skin irritation or drying. Adding mineral oil to the solution may reduce its drying effects. Lime sulfur can stain (temporarily) light colored fur. Lime sulfur's odor may persist on treated animals, but generally is tolerable once the patient dries. Oral ingestion can cause nausea and oral ulcers, mainly in cats; an Elizabethan collar may help prevent this from occurring.

**Veterinary-Labeled Lime Sulfur Topical Products**

Product (Company)	Form: Concentration	Label Status	Other Ingredients; Size(s); Comments
<i>LymDyp</i> ® (DVM)	<b>Concentrate:</b> 76.9%	OTC (Vet)	16 oz, 1 gal. Labeled for dogs, puppies, kittens and cats. Shake well and dilute before use (see dosages above).
<i>LimePlus Dip</i> ® (Dermapet)	<b>Concentrate:</b> 97.8%	OTC (Vet)	4, 16 oz., 1 gal. Labeled for dogs, puppies, kittens and cats. Shake well and dilute before use (see dosages above).

**Human-Labeled Lime Sulfur Topical Products:** None

**MICONAZOLE, TOPICAL**

(mye-kah-nah-zole)

**Indications/Actions**

Topical miconazole has activity against dermatophytes and yeasts; miconazole shampoos can be effective treatment for *Malassezia* dermatitis. Patients with severe, generalized infections may require systemic therapy. Lotions, sprays and creams are generally used for localized lesions associated with *Malassezia* or dermatophytes. See otic section for information on application for *Malassezia* otitis externa.

Topical miconazole products are generally ineffective (or minimally effective) when used alone for dermatophytosis; adjunctive systemic treatment is usually required.

Miconazole's actions are a result of altering permeability of fungal cellular membranes and interfering with peroxisomal and mitochondrial enzymes, leading to intracellular necrosis. Miconazole products are fungicidal with repeated application.

**Suggested Dosages/Precautions/Adverse Effects**

Topical creams, lotions or sprays are applied to localized lesions, usually twice daily. Shampoos need a contact time of at least 10 minutes for efficacy; they are usually recommended for use at least twice weekly.

Avoid contact with eyes. Clients should wash hands after application or wear gloves when applying.

Skin irritation is possible, but unlikely to occur, but in very inflamed, eroded to ulcerated skin, the pledgets, towelettes, spray containing alcohol (*Malaseb*®) can be severely irritating.

**Veterinary-Labeled Miconazole Topical Products**

**Note:** Miconazole nitrate is the salt generally used in pharmaceutical products. While technically, a 1% concentration of miconazole nitrate contains less than 1% miconazole, the following products are rounded to the closest full percent regardless of how much miconazole base is actually in each product.

Product (Company)	Form: Concentration	Label Status	Other Ingredients; Size(s); Comments
<i>Micro-Pearls Advantage Miconazole 1% Spray</i> ® (Evsco)	<b>Spray:</b> 1%	Rx (Vet)	4 oz. Labeled for dogs, cats, horses.
<i>Miconosol Spray</i> ® 1%	<b>Spray:</b> 1%	Rx (Vet)	120, 240 mL. Labeled for use on dogs and cats.
<i>Conofite Spray</i> ® 1% (Schering-Plough)	<b>Spray:</b> 1%	Rx (Vet)	60 mL. Labeled for use on dogs and cats.
<i>Micaved Spray</i> ® 1% (Vedco)	<b>Spray:</b> 1%	Rx (Vet)	60 mL. Labeled for use on dogs and cats.
<i>Malaseb</i> ® Spray (DVM)	<b>Spray:</b> Miconazole nitrate 2% Chlorhexidine 2%	OTC (Vet)	Alcohol 30%. 8 oz. Labeled for use in dogs, cats, & horses.

Product (Company)	Form: Concentration	Label Status	Other Ingredients; Size(s); Comments
<b>Micazole Spray®</b> (Butler)	<b>Spray:</b> 1%	Rx (OTC)	120, 240 mL. Labeled for use on dogs and cats.
<b>Malaseb® Flush</b> (DVM)	<b>Flush:</b> Miconazole nitrate 2% Chlorhexidine 2%	OTC (Vet)	4, 12 oz. Labeled for use on dogs and cats.
<b>Malaseb® Concentrate Rinse</b> (DVM)	<b>Rinse:</b> Miconazole nitrate 5.2% Chlorhexidine 5.9%	Rx (Vet)	8, 32 oz. Labeled for use on dogs, cats, horses. Must be diluted before use. Do not allow animal to lick the treated areas until dry.
<b>Malaseb® Pledgets</b> (DVM)	<b>Pledget</b> (medicated pad): 17.4 Miconazole 20 mg Chlorhexidine	OTC (Vet)	Alcohol 30%. 60 per container. Labeled for use in dogs, cats, & horses.
<b>Conofite Cream® 2%</b> (Schering-Plough)	<b>Cream:</b> 2%	Rx (Vet)	15 g. Labeled for use on dogs and cats.
<b>Resizole Leave-On Lotion®</b> (Virbac)	<b>Lotion:</b> 2%	Rx (Vet)	8 oz. Labeled for use on dogs and cats.
<b>Miconosol Lotion 1%®</b> (Med-Pharmex)	<b>Lotion:</b> 1%	Rx (Vet)	60 mL. Labeled for use on dogs and cats
<b>Conofite Lotion® 1%</b> (Schering-Plough)	<b>Lotion:</b> 1%	Rx (Vet)	30 mL. Labeled for use on dogs and cats.
<b>Micaved Lotion® 1%</b> (Vedco)	<b>Lotion:</b> 1%	Rx (Vet)	60 mL. Labeled for use on dogs and cats.
<b>Micazole Lotion® 1%</b> (Butler)	<b>Lotion:</b> 1%	Rx (Vet)	60 mL. Labeled for use on dogs and cats.
<b>Sebazole® Shampoo</b> (Vet Solutions)	<b>Shampoo:</b> Miconazole nitrate 2%, Chlorxylenol 1%	Rx (Vet)	Salicylic acid, sodium thiosulfate. 8, 12 oz, 1 gal. Labeled for dogs, cats, and horses.
<b>Micro-Pearls Advantage Miconazole 1% Shampoo®</b> (Virbac)	<b>Shampoo:</b> 1%	Rx (Vet)	Novasome® microvesicles. 12 oz. Labeled for dogs, cats, and horses.
<b>Dermazole Shampoo®</b> (Virbac)	<b>Shampoo:</b> 2%	Rx (Vet)	6, 16 oz. Labeled for use on dogs and cats.
<b>Malaseb Shampoo®</b> (DVM)	<b>Shampoo:</b> Miconazole nitrate 2% Chlorhexidine 2%	OTC (Vet)	8, 12 oz, 1 gal. Labeled for dogs, cats, and horses.

### Human-Labeled Miconazole Topical Products

In addition to the products listed below, there are 2% topical vaginal creams, vaginal suppositories, 2% powders and spray powders available. Most human-labeled products are OTC.

Product (Company)	Form: Concentration	Label Status	Other Ingredients; Size(s)
<b>Micatin®</b> (Ortho); <b>Neosporin AF®</b> (Pfizer); <b>Lotrimin AF®</b> (Schering); <b>Prescription Strength Desenex®</b> (Ciba)	<b>Spray (liquid):</b> 2%	OTC (Human)	Depending on product: 105 – 113 mL.
<b>Tetterline®</b> (SSS Co.)	<b>Ointment:</b> 2%	OTC (Human)	28.4 g.
<b>Zeosorb-AF®</b> (Stiefel)	<b>Gel:</b> 2%	OTC (Human)	24 g.
<b>Miconazole Nitrate</b> (Taro); <b>Micatin®</b> (Ortho); <b>Monistat-Derm®</b> (Ortho); <b>Neosporin AF®</b> (Pfizer)	<b>Cream:</b> 2%	OTC (Human)	Depending on product: 15, 30, 90 g..

## NYSTATIN

(nye-sta-tin)

*For systemic use, see the monograph found in the main section.*

### Indications/Actions

Because of limited dosage forms and other alternative antiyeast medications readily available, nystatin is not usually used alone in small animal medicine. The combination products (Panalog et al) can be useful for topical lesions caused by yeasts or yeast-like organisms; they have been used for mixed otitis infections for many years.

Nystatin has efficacy against many yeasts and yeast-like organisms (Malassezia). Its mechanism of action is believed secondary to binding to sterols in the fungal cell membranes thereby increasing membrane permeability with leakage of intracellular components. Nystatin does not have activity against bacteria and is ineffective against other fungi.