

Product Name:

No. 2327

One Quart (5) (32 Fl. Oz.)

Piperazine Plus

(Piperazine-Carbon Disulfide Complex with phenothiazine)
Suspension

FOR VETERINARY USE
IN HORSES ONLY

An aid in the elimination of the principal internal parasites in horses and ponies.

Each fluidounce contains:
Piperazine-Carbon Disulfide Complex 5.0 Gm.
Phenothiazine 0.83 Gm.

Information for use—See insert
Licensed under U.S. Patent No. 24,657
SHAKE WELL BEFORE USING

Protect from freezing
Caution: Federal law (U.S.A.) restricts this drug to sale by or on the order of a licensed veterinarian.

The Upjohn Company • Kalamazoo, Michigan

Active Ingredients:

Piperazine-Carbon Disulfide Complex	17.5% w/w
Phenothiazine	2.5% w/w
Inert Ingredients	79.8% w/w
	<hr/> 100.0%

EACH USE

Side Panel:

Piperazine Plus is indicated for removing the following internal parasites from horses and ponies: ascarids; large roundworms; bots; small strongyles; large strongyles; and pinworms.

DIRECTIONS FOR USE

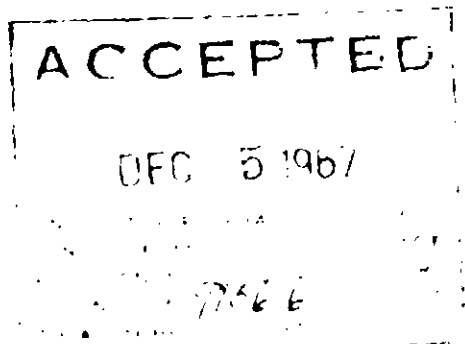
Shake Well Before Using

Each Use

Dose: 1/2 fluidounces per 100 lbs. of body weight
Administration: Give by stomach tube or dose syringe after withholding feed overnight or for 8 to 10 hours. For greatest efficiency in removing bots, the anthelmintic should be followed by about a pint of dilute acidic solution, such as 0.5% hydrochloric acid. Provide water as usual, and 4 to 6 hours after treatment resume regular feeding.

Note: This suspension is expected to be effective against bots for a period of one week following treatment.

Caution: Do not use in conjunction with other anthelmintics. Do not use in conjunction with Depo-MeagroTM (metaphosphoramide) or other phosphoramide compounds. Do not use in conjunction with other drugs which may be administered to the animal. Do not use in conjunction with Depo-MeagroTM (metaphosphoramide) or other phosphoramide compounds. Do not use in conjunction with other drugs which may be administered to the animal.



Do not use in conjunction with other anthelmintics or other phosphoramide compounds. Do not use in conjunction with Depo-MeagroTM (metaphosphoramide) or other phosphoramide compounds.

Depo-MeagroTM (metaphosphoramide)

CONTRAINDICATED IN DEBILITATED OR ANEMIC ANIMALS

— USDA Reg. No. 2327 —



Parvex Plus (a piperazine disulfide complex with phenothiazine)

For Intermittent Use in Horses Only

Parvex Plus is an anthelmintic drug specifically formulated to remove the principal internal parasites from the equine species. It contains a synergistic combination of piperazine disulfide complex and phenothiazine. A convenient oral suspension for oral administration, each fluid ounce contains 3 grams of the piperazine-carbon disulfide complex and 0.63 gram of phenothiazine.

Chemistry
Parvex Plus is composed of equal parts of piperazine and carbon disulfide and has a higher molecular concentration of piperazine than any of the common salts of piperazine. One gram of the piperazine-carbon disulfide complex contains 500 mg. of piperazine and 470 mg. of carbon disulfide. It is relatively insoluble and stable at neutrality but readily dissociates in weak acids, such as gastric juice, into piperazine and carbon disulfide, both of which have potent anthelmintic actions.

The phenothiazine in Parvex Plus is a highly purified, relatively insoluble form of the compound. So that it may exert its greatest anthelmintic activity, it is finely micronized and stabilized in the liquid with several suspending agents.

Pharmacology
Parvex and phenothiazine have synergistic, complementary,

and additive effects in eliminating the principal internal parasites from horses and ponies.

Piperazine has a paralyzing action on worms, causing them to be promptly expelled in a contracted state. This, in turn, also often produces discomfort in the intestines and absorption of residual toxins within the intestinal tract.

Carbon disulfide apparently paralyzes or kills the parasites so that they are soon excreted from the host.

Phenothiazine is an inhibitor of enzymes (trypsin and other enzyme systems) and usually exerts its anthelmintic effect in this way. Where phenothiazine has been used in horses over a long period of time, no resistance to several resistant strains of the nematode with respect to piperazine-carbon disulfide complex. This resistance is extremely low, even though the amount of phenothiazine is one half the usual therapeutic dose.

The different modes of action, the synergistic, complementary, and additive anthelmintic effects on equine internal parasites of Parvex with phenothiazine account for its selective and efficient activity against the principal internal parasites of the horse.

Safety

In addition to proper indications, Parvex Plus must be used correctly. The combination formulation gives it a margin of safety not found in many single ingredient formulations.

In a series of studies, the safety of Parvex Plus was evaluated in horses of various ages and breeds. The drug was administered to nursing foals and yearlings. The results of these studies indicate that the drug is safe for use in horses of all ages. In fact, the drug is safer than many other anthelmintics used in horses. Within 2 weeks of foaling, many mares were also nursing foals.

The studies indicated that minor, transient changes in some

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animals can be expected at the recommended dose. These are a depression of appetite and loosened stools. At double and triple the recommended dose, depression, anorexia, muscular weakness, increased pulse rate, and abdominal pain were observed.

Blood studies for 5 months on horses given the recommended dose of Parvex Plus (piperazine-carbon disulfide complex with phenothiazine) revealed no significant reduction in erythrocytes or clinical anemia. However, some horses showed a tendency for a slight decrease in packed-cell volume and hemoglobin, which appeared to be a transient condition of no clinical significance.

The Dangers of Internal Parasites in the Horse

Internal parasites are constant companions of the equine species. Clinical parasitism is relatively rare under the current methods of horse management. However, it does occasionally occur, usually as a result of lack of recognition of the parasitic condition on the part of novice horse owners.

Subclinical parasitism is common and widespread throughout the horse population. By its insidious nature, it takes a greater toll than clinical parasitism on the health and performance of horses. Parasites have the most adverse effect on the growth and development of young animals. Larval forms of ascarids and strongyles invade and damage many tissues in their migrations. In the migratory process, they are suspected of spreading bacterial and viral infections. Both mature and immature parasites subsist directly on the host animal or its ingesta, destroying tissue, consuming body fluids, and robbing the host of nutrients. If allowed to do so, the mature animal can consume sufficient food to take care of himself and a subclinical parasite infection; but the parasitized animal is a less efficient converter of feedstuffs to body tissues and energy. Also, he is less resistant to pathogenic organisms in his en-

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vironment, and in disease states his recuperative powers are diminished.

By shedding infective eggs and infective larvae, parasitized animals are a constant source of reinfection to themselves and others. An effective parasite control program is essential to good management. The proper use of Parvex Plus (piperazine-carbon disulfide complex with phenothiazine) coupled with sanitary practices, pasture management, and insect control will eliminate many parasites and permit horses and ponies to grow and perform at top efficiency.

Indications

Parvex Plus was designed specifically for the treatment of internal parasitism in horses and ponies. The synergistic and additive action of its components exert a multifaceted attack on the major gastrointestinal parasites except the tapeworm.

Established by critical test and confirmed by clinical evaluation, Parvex Plus effectively eliminates parasites as follows:

Ascarids or large roundworms (<i>Parascaris equorum</i>)	95-100% removal
Bots (<i>Gastrophilus</i> species)	93-99% removal
Large Strongyles or bloodworms (<i>Strongylus vulgaris</i> , <i>S. edentatus</i> , and <i>S. equinus</i>)	90-100% removal
Small Strongyles or cyclicostomes (<i>Triclanema</i> species)	95-100% removal
Pinworms (<i>Oxyuris equi</i>) (mature forms)	70-80% removal
(immature forms)	40-50% removal

Parvex Plus is the most effective and efficient of the anthelmintics currently used in treating horses. It is recommended for animals of all ages and breeds. It has been used in pregnant mares at all stages of gestation and in mares nursing foals without adverse effect in either. It is generally suggested that anthelmintic treatment not be administered to mares in

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75 - 85% removal*

*Limited testing of a weak acid solution (300 cc. of 0.5% hydrochloric acid) administered immediately following Parvex Plus administration, increased removal to 93 - 99%.

the last month of pregnancy, and this rule should be followed with the anthelmintic.

Horses may be retreated as required by exposure to re-infection and by the natural life cycle of the parasite. The infective eggs of ascarids and pinworms, and the infective larvae of the strongyles persist in stables, paddocks, and pastures, and are constant sources of infection. The botfly lays its eggs on the horse during the summer months, which in southern regions may extend over a 6-month period. The development of the bot in the stomach or duodenum requires 8 to 12 months, hence they may be present at any time of the year.

In view of the foregoing, it is suggested that sucklings and yearlings be treated at 4- to 6-week intervals to keep their parasite load at a minimum. Depending on the methods of husbandry, the treatment of yearlings, 2- and 3-year olds may be extended to a quarterly basis. Treating mature horses 2 or 3 times a year will usually maintain adequate control of internal parasites.

Contraindications

Horses, ponies, or foals obviously sick with infectious diseases, affected or recently affected with gastrointestinal disorders such as colic, enteritis, and diarrhea should not be treated with Parvex Plus (piperazine-carbon disulfide complex with phenothiazine) or any anthelmintic.

Also, treatment of debilitated and anemic animals is contraindicated.

As with most anthelmintics, drastic cathartics or other gastrointestinal irritants should not be administered in conjunction with Parvex Plus.

Precautions

If a gastrointestinal condition exists caused by parasites susceptible to Parvex Plus, the product may be used to alleviate the situation. In these areas, in animals in poor physical condition, and/or those with extremely heavy parasite loads, it is advisable to give one-half the dose to preclude intestinal obstruction due to entangled masses of ascarids or large num-

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bers of oots. The treatment may be repeated at 2-week intervals in accordance with the response of the animal.

It is suggested that pregnant mares not be treated for internal parasites during the last month of gestation.

Should side effects occur, such as acute sensitivity to drugs, appropriate supportive therapy should be initiated. Adrenal corticosteroids are very helpful; depending on the severity of the reaction, intravenous therapy such as Solu-Delta-Cortef® (prednisolone sodium succinate), or intramuscular therapy such as Predaf® (9-fluoroprednisolone acetate), Depo-Medrol® (methylprednisolone acetate), or Delta-Cortef® (prednisolone) should be given. Intravenous glucose or saline may also be indicated.

Side Effects
Side effects observed are characteristic of those generally seen with anthelmintics. Depression of appetite may occur in 10% to 12% of the horses. This is a transient condition, with the animals usually consuming their regular ration within 24 hours after treatment.

Occasionally loose stools or diarrhea occurs after treatment, and infrequently there is evidence of mild abdominal pain or colic. Spontaneous remission usually occurs, but if the diarrhea or pain persists, symptomatic treatment should be instituted.

Horses also may exhibit minor changes in the blood picture but these do not appear to be of clinical significance (see Safety).

Dose

Parvex Plus (piperazine-carbon disulfide complex with phenothiazine) should be given at the rate of 1½ fluidounces per 100 pounds of body weight. In certain situations, it may be advisable to give one-half this amount (see Precautions).

Administration

Parvex Plus may be administered with a stomach tube or dose syringe, followed by warm water to clear the instruments. To

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obtain the highest efficiency against oots, administration should be followed with about a pint of weak acidic solution, such as 0.5% hydrochloric acid. This procedure speeds up the dissociation of the piperazine-carbon disulfide complex.

Also important to antihelmintic efficiency is proper preparation of the animal. To obtain a reasonably empty stomach, withhold feed overnight or for 6 to 10 hours.

After treatment the horses may have access to drinking water as usual and the regular feeding schedule may be resumed in 4 to 6 hours.

Parasites will be eliminated beginning about 16 hours after treatment and most of them will appear in the feces within 36 hours. However, some worms and oots have been passed as late as 7 or 8 days following treatment.

Repeating treatments may be done as necessary (see Indications).

Advantages of Parvax Plus

(piperazine-carbon disulfide complex with phenothiazine)

1. One treatment usually effective against large strongyles, small strongyles, ascarids, bots, and pinworms.
2. Improved antihelmintic efficiency through the synergistic, complementary, and additive action of the active ingredients.
3. Effective against phenothiazine-resistant parasites.
4. Usually rapid expulsion of parasites.

~~Easy to use with the usual oral paste.~~
~~Free flowing, easily administered suspension.~~

The Package

Available in quarts and gallons.

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The Upjohn Company - Veterinary Division
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Parvax Plus

(piperazine-carbon disulfide complex with phenothiazine)

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