

# BILTRICIDE<sup>®</sup>

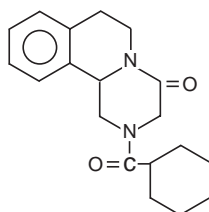
## TABLETS

### (praziquantel)

#### DESCRIPTION

BILTRICIDE<sup>®</sup> (praziquantel) is a trematodicide provided in tablet form for the oral treatment of schistosome infections and infections due to liver fluke.

BILTRICIDE<sup>®</sup> (praziquantel) is 2-(cyclohexylcarbonyl)-1,2,3,6,7, 11b-hexahydro-4H-pyrazino [2, 1-a] isoquinolin-4-one with the molecular formula; C<sub>19</sub>H<sub>24</sub>N<sub>2</sub>O<sub>2</sub>. The structural formula is as follows:



Praziquantel is a white to nearly white crystalline powder of bitter taste. The compound is stable under normal conditions and melts at 136-140°C with decomposition. The active substance is hygroscopic. Praziquantel is easily soluble in chloroform and dimethylsulfoxide, soluble in ethanol and very slightly soluble in water.

BILTRICIDE tablets contain 600 mg of praziquantel. Inactive ingredients: corn starch, magnesium stearate, microcrystalline cellulose, povidone, sodium lauryl sulfate, polyethylene glycol, titanium dioxide and-hypromellose.

#### CLINICAL PHARMACOLOGY

Praziquantel induces a rapid contraction of schistosomes by a specific effect on the permeability of the cell membrane. The drug further causes vacuolization and disintegration of the schistosome tegument.

After oral administration BILTRICIDE<sup>®</sup> is rapidly absorbed (80%), subjected to a first pass effect, metabolized and eliminated by the kidneys. Maximal serum concentration is achieved 1-3 hours after dosing. The half-life of praziquantel in serum is 0.8-1.5 hours.

Special Populations: The pharmacokinetics of praziquantel were studied in 40 patients *with Schistosoma mansoni* infections with varying degrees of hepatic dysfunction (See table1). In patients with schistosomiasis, the pharmacokinetic parameters did not differ significantly between those with normal hepatic function (Group 1) and those with mild (Child-Pugh B) hepatic impairment. However, in patients with moderate-to-severe hepatic dysfunction (Child-Pugh Class B and C), praziquantel half-life, C<sub>max</sub>, and AUC increased progressively with the degree of hepatic impairment. In Child-Pugh class B, the increases in mean half-life, C<sub>max</sub>, and AUC relative to Group 1 were 1.58-fold, 1.76-fold, and 3.55-fold, respectively. The corresponding increases in Child-Pugh class C patients were 2.82-fold, 4.29-fold, and 15-fold for half-life, C<sub>max</sub>, and AUC.

Table 1: Pharmacokinetic parameters of praziquantel in four groups of patients with varying degrees of liver function following administration of 40 mg/kg under fasting conditions.

Patient Group	Half-life (hr)	T <sub>max</sub> (hr)	C <sub>max</sub> (µg/mL)	AUC (µg/mL* hr)
<b>Normal hepatic function (Group 1)</b>	2.99 ± 1.28	1.48 ± 0.74	0.83 ± 0.52	3.02 ± 0.59

<b>Child-Pugh A (Group 2)</b>	4.66 ± 2.77	1.37 ± 0.61	0.93 ± 0.58	3.87 ± 2.44
<b>Child-Pugh B (Group 3)</b>	4.74 ± 2.16 <sup>a</sup>	2.21 ± 0.78 <sup>a,b</sup>	1.47 ± 0.74 <sup>a,b</sup>	10.72 ± 5.53 <sup>a,b</sup>
<b>Child-Pugh C (Group 4)</b>	8.45 ± 2.62 <sup>a,b,c</sup>	3.2 ± 1.05 <sup>a,b,c</sup>	3.57 ± 1.30 <sup>a,b,c</sup>	45.35 ± 17.50 <sup>a,b,c</sup>

a) p<0.05 compared to Group 1

b) p<0.05 compared to Group 2

c) p<0.05 compared to Group 3

### INDICATIONS AND USAGE

BILTRICIDE<sup>®</sup> is indicated for the treatment of infections due to: all species of schistosoma (e.g. *Schistosoma mekongi*, *Schistosoma japonicum*, *Schistosoma mansoni* and *Schistosoma hematobium*), and infections due to the liver flukes, *Clonorchis sinensis*/ *Opisthorchis viverrini* (approval of this indication was based on studies in which the two species were not differentiated).

### CONTRAINDICATIONS

BILTRICIDE<sup>®</sup> must not be given to patients who previously have shown hypersensitivity to the drug. Since parasite destruction within the eye may cause irreparable lesions, ocular cysticercosis should not be treated with this compound.

### WARNINGS

Therapeutically effective levels of praziquantel may not be achieved with concomitant administration of strong inducers of cytochrome P450 such as rifampin.

### PRECAUTIONS

#### General:

Approximately 80% of a dose of praziquantel is excreted in the kidneys, almost exclusively (>99%) in the form of metabolites. Excretion might be delayed in patients with impaired renal function, but accumulation of unchanged drug would not be expected. Therefore, dose adjustment for renal impairment is not considered necessary. Nephrotoxic effects of praziquantel or its metabolites are not known.

Caution should be exercised in the administration of the usual recommended dose of praziquantel to hepatosplenic schistosomiasis patients with moderate to severe liver impairment (Child Pugh Class B and C). Reduced metabolism of praziquantel by the liver in these patients may lead to considerably higher and longer lasting plasma concentrations of unmetabolized praziquantel (See **CLINICAL PHARMACOLOGY/Special Populations**).

Minimal increases in liver enzymes have been reported in some patients.

Patients suffering from cardiac irregularities should be monitored during treatment.

When schistosomiasis or fluke infection is found to be associated with cerebral cysticercosis it is advised to hospitalize the patient for the duration of treatment.

#### Information for Patients:

Patients should be warned not to drive a car and not to operate machinery on the day of BILTRICIDE<sup>®</sup> treatment and the following day.

#### Drug Interactions:

Concomitant administration of drugs that increase the activity of drug metabolizing liver enzymes (Cytochrome P450), e.g. antiepileptic drugs (phenytoin, phenobarbital and carbamazepine), dexamethasone, may reduce plasma levels of praziquantel. Concomitant administration of rifampin should be avoided (see **WARNINGS**). Concomitant administration of drugs that decrease the activity of drug metabolizing liver enzymes (Cytochrome P 450), e.g.

cimetidine, ketoconazole, itraconazole, erythromycin may increase plasma levels of praziquantel. Chloroquine, when taken simultaneously, may lead to lower concentrations of praziquantel in blood. The mechanism of this drug-drug interaction is unclear. Grapefruit juice was reported to produce a 1.6-fold increase in the C<sub>max</sub> and a 1.9-fold increase in the AUC of praziquantel. However, the effect of this exposure increase on the therapeutic effect and safety of praziquantel has not been systematically evaluated.

**Mutagenesis, Carcinogenesis:**

Mutagenic effects in Salmonella tests found by one laboratory have not been confirmed in the same tested strain by other laboratories. Long term carcinogenicity studies in rats and golden hamsters did not reveal any carcinogenic effect.

**Pregnancy Category B:**

Reproduction studies have been performed in rats and rabbits at doses up to 40 times the human dose and have revealed no evidence of impaired fertility or harm to the fetus due to praziquantel. There are, however, no adequate and well-controlled studies in pregnant women. An increase of the abortion rate was found in rats at three times the single human therapeutic dose. While animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

**Nursing mothers:**

Praziquantel appeared in the milk of nursing women at a concentration of about 1/4 that of maternal serum. Women should not nurse on the day of BILTRICIDE<sup>®</sup> treatment and during the subsequent 72 hours.

**Pediatric use:**

Safety in children under 4 years of age has not been established.

**Geriatric use:**

Clinical studies of praziquantel did not include a sufficient number of subjects ages 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older patients cannot be ruled out.

This drug is known to be substantially excreted by the kidney. Because elderly patients are more likely to have decreased renal function, the risk of toxic reactions to this drug may be greater in these patients.

**ADVERSE EVENTS**

In general BILTRICIDE<sup>®</sup> is very well tolerated. Side effects are usually mild and transient and do not require treatment. The following side effects were observed generally in order of severity: malaise, headache, dizziness, abdominal discomfort with or without nausea, rise in temperature and, rarely, urticaria. Such symptoms can, however, also result from the infection itself. Such side effects may be more frequent and/or serious in patients with a heavy worm burden. ~~In patients with liver impairment caused by the infection, no adverse effects of BILTRICIDE<sup>®</sup> have occurred which would necessitate restriction in use.~~

**Post Marketing Adverse Event Reports:**

Additional adverse events reported from worldwide post marketing experience and from publications with praziquantel include:

abdominal pain, allergic reaction (generalized hypersensitivity) including polyserositis, anorexia, arrhythmia (including bradycardia, ectopic rhythms, ventricular fibrillation, AV blocks), asthenia, bloody diarrhea, convulsion, myalgia, somnolence, vertigo, vomiting

**OVERDOSAGE**

In rats and mice the acute LD<sub>50</sub> was about 2,500 mg/kg. No data are available in humans. In the event of overdose a fast-acting laxative should be given.

### **DOSAGE AND ADMINISTRATION**

The dosage recommended for the treatment of schistosomiasis is: 20 mg/kg bodyweight three times a day as a one day treatment, at intervals of not less than 4 hours and not more than 6 hours. The recommended dose for clonorchiasis and opisthorchiasis is: 25 mg/kg bodyweight three times a day as a one day treatment, at intervals of not less than 4 hours and not more than 6 hours. The tablets should be washed down unchewed with water during meals. Keeping the tablets or segments thereof in the mouth can reveal a bitter taste which can promote gagging or vomiting.

### **HOW SUPPLIED**

BILTRICIDE<sup>®</sup> is supplied as a 600 mg white to orange tinged, film-coated, oblong tablet with three scores. The tablet is coded with "BAYER" on one side and "LG" on the reverse side. When broken each of the four segments contain 150 mg of active ingredient so that the dosage can be easily adjusted to the patient's bodyweight.

Segments are broken off by pressing the score (notch) with thumbnails. If 1/4 of a tablet is required, this is best achieved by breaking the segment from the outer end.

BILTRICIDE<sup>®</sup> is available in bottles of 6 tablets.

	<b>Strength</b>	<b>NDC</b>
Bottles of 6:	600 mg	0026-2521-06

**Store below 86°F (30°C).**



## **Bayer HealthCare**

Bayer Pharmaceuticals Corporation  
400 Morgan Lane  
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Made in Germany

**Rx Only**

EMBAY 8440  
Bayer Pharmaceuticals Corporation

Printed in U.S.A.