

**CENTER FOR DRUG EVALUATION AND RESEARCH**

Application Number 74-655

**FINAL PRINTED LABELING**

**Ranitidine Capsules**  
**150 mg**

CAUTION: Federal law prohibits dispensing without prescription.  
**30 CAPSULES**

**Geneva**  
 pharmaceuticals, inc.



N 3 0781-2855-31 7  
 Each capsule contains: Ranitidine hydrochloride  
 USP equivalent to 150 mg ranitidine.  
 Usual Dosage: See package insert.  
 Store between 20-25°C (36-77°F) in a dry place.  
 Protect from light. Replace cap securely after opening. **KEEP THIS AND ALL DRUGS OUT OF THE REACH OF CHILDREN.**  
 Rev. 95-04 Manufactured By N95/10  
 Geneva Pharmaceuticals, Inc.  
 Broomfield, CO 80020

LOT:  
 EXP:

**Ranitidine Capsules**  
**150 mg**

**Geneva**  
 pharmaceuticals, inc.



N 3 0781-2855-60 7  
 Each capsule contains: Ranitidine hydrochloride,  
 USP equivalent to 150 mg ranitidine.  
 Usual Dosage: See package insert.  
 Store between 20-25°C (36-77°F) in a dry place.  
 Protect from light. Replace cap securely after opening. **KEEP THIS AND ALL DRUGS OUT OF THE REACH OF CHILDREN.**  
 Rev. 95-04 Manufactured By N95/10  
 Geneva Pharmaceuticals, Inc.  
 Broomfield, CO 80020

LOT:  
 EXP:

**Ranitidine Capsules**  
**150 mg**

**Geneva**  
 pharmaceuticals, inc.




N 3 0781-2855-92 8  
 Each capsule contains: Ranitidine hydrochloride,  
 USP equivalent to 150 mg ranitidine.  
 Usual Dosage: See package insert.  
 Store between 20-25°C (36-77°F) in a dry place.  
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 Rev. 95-04 Manufactured By N95/10  
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LOT:  
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**Ranitidine Capsules**  
**150 mg**  
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 Rev. 95-9M Manufactured By N95/10  
 Geneva Pharmaceuticals, Inc.  
 Broomfield, CO 80020

LOT:  
 EXP:

**Ranitidine Capsules**  
**150 mg**


**Geneva**  
 pharmaceutical, inc.

  
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 USP equivalent to 150 mg ranitidine.  
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 pharmaceutical, inc.

  
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 Rev. 95-9M Manufactured By N95/10  
 Geneva Pharmaceuticals, Inc.  
 Broomfield, CO 80020

LOT:  
 EXP:

**Ranitidine Capsules**  
**300 mg**  
 CAUTION: Federal law prohibits dispensing without prescription.  
**30 CAPSULES**

**Geneva**  
 pharmaceuticals, inc.

N 3 0781-2865-31 6  
 Each capsule contains: Ranitidine hydrochloride USP equivalent to 300 mg ranitidine.  
 Usual Dosage: See package insert.  
 Store between 20-25°C (36-77°F) in a dry place. Protect from light. Replace cap securely after opening. **KEEP THIS AND ALL DRUGS OUT OF THE REACH OF CHILDREN.**  
 Rev. 95-9M Manufactured By N95/10  
 Geneva Pharmaceuticals, Inc.  
 Broomfield, CO 80020

LOT:  
 EXP:

APPROVED

**Ranitidine Capsules**  
**300 mg**  
 [Redacted]

**Geneva**  
 pharmaceuticals, inc.

N 3 0781-2865-60 6  
 Each capsule contains: Ranitidine hydrochloride USP equivalent to 300 mg ranitidine.  
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 Store between 20-25°C (36-77°F) in a dry place. Protect from light. Replace cap securely after opening. **KEEP THIS AND ALL DRUGS OUT OF THE REACH OF CHILDREN.**  
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LOT:  
 EXP:

APPROVED

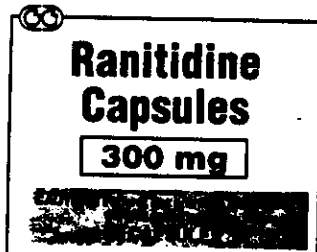
**Ranitidine Capsules**  
**300 mg**  
 [Redacted]

**Geneva**  
 pharmaceuticals, inc.

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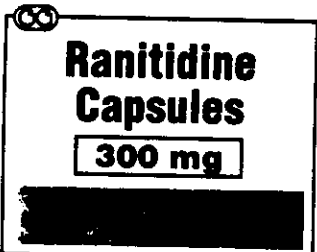


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Rev. 95-0M Manufactured By N95/10  
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LOT:  
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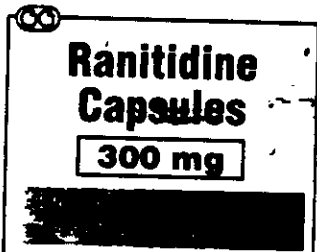


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In two additional U.S. multicenter, double-blind, placebo-controlled, 2-week trials, ranitidine 150 mg b.i.d. was shown to provide relief of heartburn pain within 24 hours of initiating therapy and a reduction in the frequency and severity of heartburn.

**Erosive Esophagitis:** In two multicenter, double-blind, randomized, placebo-controlled, 12-week trials performed in the United States, ranitidine 150 mg q.i.d. was significantly more effective than placebo in healing endoscopically-diagnosed erosive esophagitis and in relieving associated heartburn. The erosive esophagitis healing rates were as follows:

**EROSIVE ESOPHAGITIS PATIENT HEALING RATES**

	Healed/Evaluable	
	Placebo <sup>a</sup> n = 229	Ranitidine 150 mg q.i.d. <sup>b</sup> n = 215
Week 4	43/198 (22%)	96/206 (47%)†
Week 8	63/176 (36%)	142/200 (71%)†
Week 12	92/156 (58%)	162/192 (84%)†

<sup>a</sup> All patients were permitted p.r.n. antacids for relief of pain.  
<sup>†</sup> p < 0.001 versus placebo.  
 No additional benefit in healing of esophagitis or in relief of heartburn was seen with a ranitidine dose of 300 mg q.i.d.

**INDICATIONS AND USAGE:** Ranitidine capsules are indicated in:

1. Short-term treatment of active duodenal ulcer. Most patients heal within 4 weeks. Studies available to date have not assessed the safety of ranitidine in uncomplicated duodenal ulcer for periods of more than 8 weeks.
2. Maintenance therapy for duodenal ulcer patients at reduced dosage after healing of acute ulcers. No placebo-controlled comparative studies have been carried out for periods of longer than 1 year.
3. The treatment of pathological hypersecretory conditions (e.g., Zollinger-Ellison syndrome and systemic mastocytosis).
4. Short-term treatment of active, benign gastric ulcer. Most patients heal within 8 weeks and the usefulness of further treatment has not been demonstrated. Studies available to date have not assessed the safety of ranitidine in uncomplicated, benign gastric ulcer for periods of more than 8 weeks.
5. Treatment of GERD. Symptomatic relief commonly occurs within 24 hours after starting therapy with ranitidine 150 mg b.i.d.
6. Treatment of endoscopically-diagnosed erosive esophagitis. Symptomatic relief of heartburn commonly occurs within 24 hours of therapy initiation with ranitidine 150 mg q.i.d.

Concomitant antacids should be given as needed for pain relief to patients with active duodenal ulcer, active, benign gastric ulcer, hypersecretory states, GERD, and erosive esophagitis.

**CONTRAINDICATIONS:** Ranitidine is contraindicated in patients known to have hypersensitivity to the drug or any of the ingredients.

**PRECAUTIONS:**

**General:**

1. Symptomatic response to ranitidine therapy does not preclude the presence of gastric malignancy.
2. Since ranitidine is excreted primarily by the kidney, dosage should be adjusted in patients with impaired renal function (see DOSAGE AND ADMINISTRATION). Caution should be observed in patients with hepatic dysfunction since ranitidine is metabolized in the liver.
3. Rare reports suggest that ranitidine may precipitate acute porphyric attacks in patients with acute porphyria. Ranitidine should therefore be avoided in patients with a history of acute porphyria.

**Laboratory Tests:** False-positive tests for urine protein with Multistix® may occur during ranitidine therapy, and therefore testing with sulfosalicylic acid is recommended.

**Drug Interactions:** Although ranitidine has been reported to bind weakly to cytochrome P-450 in vitro, recommended doses of the drug do not inhibit the action of the cytochrome P-450-linked oxygenase enzymes in the liver. However, there have been isolated reports of drug interactions that suggest that ranitidine may affect the bioavailability of certain drugs by some mechanism as yet unidentified (e.g., a pH-dependent effect on absorption or a change in volume of distribution).

Increased or decreased prothrombin times have been reported during concurrent use of ranitidine and warfarin. However, in human pharmacokinetic studies with dosages of ranitidine up to 400 mg per day, no interaction occurred; ranitidine had no effect on warfarin clearance or prothrombin time. The possibility of an interaction with warfarin at dosages of ranitidine higher than 400 mg per day has not been investigated.

**Cardiogenesis, Mutagenesis, Impairment of Fertility:** There was no indication of tumorigenic or carcinogenic effects in Mexican studies in mice and rats at dosages up to 2,000 mg/kg per day.

Ranitidine was not mutagenic in standard bacterial tests (*Salmonella*, *Escherichia coli*) for mutagenicity at concentrations up to the maximum recommended for these assays.

In a dominant lethal assay, a single oral dose of 1,000 mg/kg to male rats was without effect on the outcome of two matings per week for the next 9 weeks.

**Pregnancy: Teratogenic Effects: Pregnancy Category B:** Reproduction studies have been performed in rats and rabbits at doses up to 180 times the human dose and have revealed no evidence of impaired fertility or harm to the fetus due to ranitidine. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

**Flowing Mothers:** Ranitidine is secreted in human milk. Caution should be exercised when ranitidine is administered to a nursing mother.

**Pediatric Use:** Safety and effectiveness in pediatric patients have not been established.

**Use in Elderly Patients:** Ulcer healing rates in elderly patients (65 to 82 years of age) were no different from those in younger age groups. The incidence rates for adverse events and laboratory abnormalities were also not different from those seen in other age groups.

**ADVERSE REACTIONS:** The following have been reported as events in clinical trials or in the routine management of patients treated with ranitidine. The relationship to ranitidine therapy has been unclear in many cases.

**Headache,** sometimes severe, seems to be related to ranitidine administration.

**Gastrointestinal System:** Rarely, malaise, dizziness, somnolence, insomnia, and vertigo. Rare cases of reversible mental confusion, agitation, depression, and hallucinations have been reported, predominantly in severity in elderly patients. Rare cases of reversible blurred vision suggestive of a change in accommodation have been reported. Rare reports of reversible involuntary motor disturbances have been received.

**Cardiovascular:** As with other H<sub>2</sub>-blockers, rare reports of arrhythmias such as tachycardia, bradycardia, sinoventricular block, and premature ventricular beats.

**Gastrointestinal:** Constipation, diarrhea, nausea/vomiting, abdominal discomfort/pain, and rare reports of pancreatitis.

**Hepatic:** In normal volunteers, SGPT values were increased to at least twice the pretreatment levels in 8 of 12 subjects receiving 100 mg q.i.d. intravenously for 7 days, and in 4 of 24 subjects receiving 50 mg q.i.d. intravenously for 5 days. There have been occasional reports of hepatitis, hepatocellular or hepatocellular or mixed, with or without jaundice. In such circumstances, ranitidine should be immediately discontinued. These events are usually reversible, but in exceedingly rare circumstances death has occurred.

**Musculoskeletal:** Rare reports of arthralgias and myalgias.

**Hematologic:** Blood count changes (leukopenia, granulocytopenia, and thrombocytopenia) have occurred in a few patients. These were usually reversible. Rare cases of agranulocytosis, pancytopenia, sometimes with marrow hypoplasia, and aplastic anemia and exceedingly rare cases of acquired immune hemolytic anemia have been reported.

**Endocrine:** Controlled studies in animals and man have shown no stimulation of any pituitary hormone by ranitidine and no antihypothalamic activity, and ornidazole-induced gynecomastia and impotence in hypersecretory patients have resolved when ranitidine has been substituted. However, occasional cases of gynecomastia, impotence, and loss of libido have been reported in male patients receiving ranitidine, but the incidence did not differ from that in the general population.

**Integumentary:** Rash, including rare cases of erythema multiforme, and rarely, staphylococcal.

**Other:** Rare cases of hypersensitivity reactions (e.g., bronchospasm, fever, rash, eosinophilia), anaphylaxis, angioneurotic edema, and small increases in serum creatinine.

**OVERDOSAGE:** There has been limited experience with overdosage. Reported acute ingestions of up to 18 g orally have been associated with transient adverse effects similar to those encountered in normal clinical experience (see ADVERSE REACTIONS). In addition, abnormalities of pH and hypotension have been reported.

4

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**Neuroleptanalgesia:** Rare reports of arthralgia and myalgia.

**Neurolept:** Blood count changes (leukopenia, granulocytopenia, and thrombocytopenia) have occurred in a few patients. These were usually reversible. Rare cases of agranulocytosis, pancytopenia, sometimes with marrow hypoplasia, and aplastic anemia and exceedingly rare cases of acquired immune hemolytic anemia have been reported.

**Endocrine:** Controlled studies in animals and man have shown no stimulation of any pituitary hormone by ranitidine and no antandrogenic activity, and androgen-induced gynecomasia and impotence in hypersecretory patients have resolved when ranitidine has been substituted. However, occasional cases of gynecomasia, impotence, and loss of libido have been reported in male patients receiving ranitidine, but the incidence did not differ from that in the general population.

**Idiosyncrasy:** Rash, including rare cases of erythema multiforme, and, rarely, alopecia.

**Other:** Rare cases of hypersensitivity reactions (e.g., bronchospasm, fever, rash, eosinophilia), anaphylaxis, angioneurotic edema, and small increases in serum creatinine.

**OVERDOSAGE:** There has been limited experience with overdosage. Reported acute ingestions of up to 18 g orally have been associated with transient adverse effects similar to those encountered in normal clinical experience (see ADVERSE REACTIONS). In addition, abnormalities of gut and hypotension have been reported.

When overdosage occurs, the usual measures to remove unabsorbed material from the gastrointestinal tract, clinical monitoring, and supportive therapy should be employed.

Studies in dogs receiving dosages of ranitidine in excess of 225 mg/kg per day have shown muscular tremors, vomiting, and rapid respiration. Single oral doses of 1,000 mg/kg in mice and rats were not lethal. Intravenous LD<sub>50</sub> values in mice and rats were 77 and 83 mg/kg, respectively.

**DOSEAGE AND ADMINISTRATION:**

**Active Duodenal Ulcer:** The current recommended adult oral dosage of ranitidine for duodenal ulcer is 150 mg twice daily. An alternative dosage of 300 mg once daily after the evening meal or at bedtime can be used for patients in whom dosing convenience is important. The advantages of one treatment regimen compared to the other in a particular patient population have yet to be demonstrated (see CLINICAL PHARMACOLOGY: Clinical Trials: Active Duodenal Ulcer). Smaller doses have been shown to be equally effective in inhibiting gastric acid secretion in US studies, and several foreign trials have shown that 100 mg b.i.d. is as effective as the 150 mg dose.

Antacid should be given as needed for relief of pain (see CLINICAL PHARMACOLOGY: Pharmacokinetics).

**Maintenance of Healing of Duodenal Ulcer:** The current recommended adult oral dosage is 150 mg at bedtime.

**Pathological Hypersensitivity Conditions (such as Zollinger-Ellison syndrome):** The current recommended adult oral dosage is 150 mg twice a day. In some patients it may be necessary to administer ranitidine 150 mg doses more frequently. Dosages should be adjusted to individual patient needs, and should continue as long as clinically indicated. Dosages up to 6 g per day have been employed in patients with severe disease.

**Benign Gastric Ulcer:** The current recommended adult oral dosage is 150 mg twice a day.

**GERD:** The current recommended adult oral dosage is 150 mg twice a day.

**Erosive Esophagitis:** The current recommended adult oral dosage is 150 mg four times a day.

**Dosage Adjustment for Patients with Impaired Renal Function:** On the basis of experience with a group of subjects with severely impaired renal function treated with ranitidine, the recommended dosage in patients with a creatinine clearance less than 50 mL per minute is 150 mg every 24 hours. Should the patient's condition require, the frequency of dosing may be increased to every 12 hours or even further with caution. Hemodialysis reduces the level of circulating ranitidine. Ideally, the dosing schedule should be adjusted so that the timing of a scheduled dose coincides with the end of hemodialysis.

**HOW SUPPLIED:** Ranitidine capsules, for oral administration, are supplied as:

150 mg: Opaque caramel capsules, imprinted GG 614 in white ink, filled with off-white powder in bottles of 30, 60, 90, and 500.

300 mg: Opaque paraffin capsules, imprinted GG 615 in white ink, filled with off-white powder in bottles of 30, 60, 90, and 500.


Store between 20-25°C (68-77°F) in a dry place. Protect from light. Replace cap securely after each opening.

Dispense in a light, light-resistant container.

Caution: Federal law prohibits dispensing without prescription.

Rev. 97-3M C97/4  
7177-4

Manufactured By  
Geneva Pharmaceuticals, Inc.  
Broomfield, CO 80020

  
**Ranitidine  
Capsules**  
**150 mg**

**Geneva**  
pharmaceuticals, inc.



N 0781-2855-05 8

Each capsule contains:  
Ranitidine hydrochloride, USP equivalent to 150 mg ranitidine.  
**Usual Dosage:** See package insert.  
Store between 2°-25°C (36°-77°F) in a dry place. Protect from light.  
Replace cap securely after opening.  
Dispense in a tight, light-resistant container.  
**KEEP THIS AND ALL DRUGS OUT OF THE REACH OF CHILDREN.**  
Rev. 97-3M

Manufactured By  
Geneva Pharmaceuticals, Inc.  
Broomfield, CO 80020

C97/4

LOT:

EXP:

207 22 85



  
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Capsules**  
**300 mg**

**Geneva**  
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Rev. 97-3M

Manufactured By  
Geneva Pharmaceuticals, Inc.  
Broomfield, CO 80020

LOT:

EXP:

007 22

C974



7177

# RANITIDINE CAPSULES

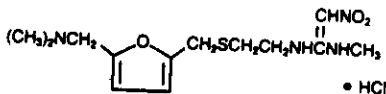
7177-4



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**DESCRIPTION:** Ranitidine hydrochloride is a histamine H<sub>2</sub>-receptor antagonist. Chemically it is N[2-[[[5-[[[dimethylamino)methyl]-2-thiuranylmethyl]thio]-silyl]-N-methyl-2-nitro-1,1-ethenediamine] hydrochloride.

Ranitidine HCl is a white to pale yellow, granular substance that is soluble in water. It has a slightly bitter taste and sulfur-like odor. It has the following structural formula:



$\text{C}_{13}\text{H}_{22}\text{N}_4\text{O}_3\text{S} \cdot \text{HCl}$  M.W. 350.87

Each capsule, for oral administration contains 150 mg or 300 mg ranitidine hydrochloride equivalent to 150 mg and 300 mg ranitidine, respectively (inactive ingredients: Ammonium hydroxide, corn starch, FD & C Blue #1, FD & C Red #40, FD & C Yellow #6, gelatin, hydroxypropyl methylcellulose, magnesium stearate, microcrystalline cellulose, pharmaceutical grade, propylene glycol, silicon dioxide, simethicone, sodium lauryl sulfate, sodium starch glycolate, and titanium dioxide).

**CLINICAL PHARMACOLOGY:** Ranitidine is a competitive, reversible inhibitor of the action of histamine at the histamine H<sub>2</sub>-receptors, including receptors on the gastric cells. Ranitidine does not lower serum Ca<sup>++</sup> in hypercalcemic states. Ranitidine is not an anticholinergic agent.

**Anteseretary Activity:**  
1. **Effects on Acid Secretion:** Ranitidine inhibits both daytime and nocturnal basal gastric acid secretions as well as gastric acid secretion stimulated by food, betazole, and pentagastrin, as shown in the following table:

**Effect of Oral Ranitidine on Gastric Acid Secretion**

	Time after Dose, h	% Inhibition of Gastric Acid Output by Dose, mg			
		75-80	100	150	200
Basal	Up to 4		99	95	
Nocturnal	Up to 13		95	96	92
Betazole	Up to 3			97	99
Pentagastrin	Up to 5	58	72	72	80
Meal	Up to 3		73	79	95

It appears that basal-, nocturnal-, and betazole-stimulated secretions are most sensitive to inhibition by ranitidine, responding almost completely to doses of 100 mg or less, while pentagastrin- and food-stimulated secretions are more difficult to suppress.

**2. Effects on Other Gastrointestinal Secretions:**

**Pepsin:** Oral ranitidine does not affect pepsin secretion. Total pepsin output is reduced in proportion to the decrease in volume of gastric juice.

**Intrinsic Factor:** Oral ranitidine has no significant effect on pentagastrin-stimulated intrinsic factor secretion.

**Serum Gastrin:** Ranitidine has little or no effect on fasting or postprandial serum gastrin.

**Other Pharmacologic Actions:**

a. Gastric bacterial flora — increase in nitrate-reducing organisms, significance not known.

b. Prolactin levels — no effect in recommended oral or IV dosage, but small transient, dose-related increases in serum prolactin have been reported after IV bolus injections of 100 mg or more.

c. Other pituitary hormones — no effect on serum gonadotropins, TSH, or GH. Possible impairment of vasopressin release.

d. No change in cortisol, aldosterone, androgen, or estrogen levels.

e. No antihandrogenic action.

f. No effect on count, motility, or morphology of sperm.

**Pharmacokinetics:** Ranitidine is 50% absorbed after oral administration, compared to an IV injection with mean peak levels of 440 to 545 ng/mL occurring at 2 to 3 hours after a 150 mg dose. The elimination half-life is 2.5 to 3 hours.

Absorption is not significantly impaired by the administration of food or antacids. Propranolol slightly delays and increases peak blood levels of ranitidine, probably by delaying gastric emptying and transit time. In one study, simultaneous administration of high-potency antacid (150 mmol) in fasting subjects has been reported to decrease the absorption of ranitidine.

Serum concentrations necessary to inhibit 50% of stimulated gastric acid secretion are estimated to be 36 to 94 ng/mL. Following a single oral dose of 150 mg, serum concentrations of ranitidine are in this range up to 12 hours. However, blood levels bear no consistent relationship to dose or degree of acid inhibition.

The principal route of excretion is the urine, with approximately 30% of the orally administered dose collected in the urine as unchanged drug in 24 hours. Renal clearance is about 410 mL per minute, indicating active tubular excretion. Four patients with clinically significant renal function impairment (creatinine clearance 25 to 35 mL per minute) administered 50 mg of ranitidine intravenously had an average plasma half-life of 4.8 hours, a ranitidine clearance of 29 mL per minute, and a volume of distribution of 1.76 L/kg. In general, these parameters appear to be altered in proportion to creatinine clearance (see DOSAGE AND ADMINISTRATION).

In man, the N-oxide is the principal metabolite in the urine; however, this amounts to less than 4% of the dose. Other metabolites are the S-oxide (1%) and the desmethyl ranitidine (1%). The remainder of the administered dose is found in the stool. Studies in patients with hepatic dysfunction (compensated cirrhosis) indicate that there are minor, but clinically insignificant, alterations in ranitidine half-life, distribution, clearance, and bioavailability.

The volume of distribution is about 1.4 L/kg. Serum protein binding averages 15%.

**Clinical Trials:**

**Active Duodenal Ulcer:** In a multicenter, double-blind, controlled US study of endoscopically diagnosed duodenal ulcers earlier healing was seen in the patients treated with ranitidine.

30 mg of ranitidine intravenously had an average plasma half-life of 4.8 hours, a ranitidine clearance of 29 ml per minute, and a volume of distribution of 1.78 L/kg. In general, these parameters appear to be altered in proportion to creatinine clearance (see DOSAGE AND ADMINISTRATION). In man, the *N*-acetyl is the principal metabolite in the urine; however, this amounts to less than 4% of the dose. Other metabolites are the *S*-oxide (1%) and the dimethyl ranitidine (1%). The remainder of the administered dose is found in the stool. Studies in patients with hepatic dysfunction (compensated cirrhosis) indicate that there are minor, but clinically insignificant, alterations in ranitidine half-life, distribution, clearance, and bioavailability.

The volume of distribution is about 1.4 L/kg. Serum protein binding averages 15%.

**Clinical Trials:**

**Active Duodenal Ulcer:** In a multicenter, double-blind, controlled, US study of endoscopically diagnosed duodenal ulcers, earlier healing was seen in the patients treated with ranitidine as shown in Table 1.

Table 1

	Ranitidine*		Placebo*	
	Number Entered	Healed/Evaluable	Number Entered	Healed/Evaluable
Outpatients				
Week 2	195	69/182 (38%)†	188	31/164 (19%)
Week 4		137/187 (73%)†		76/168 (45%)

\* All patients were permitted p.r.n. antacids for relief of pain.  
† P < 0.0001.

In these studies patients treated with ranitidine reported a reduction in both daytime and nocturnal pain, and they also consumed less antacid than the placebo-treated patients as shown in Table 2.

Table 2

	Mean Daily Doses of Antacid	
	Ulcer Healed	Ulcer Not Healed
Ranitidine	0.06	0.71
Placebo	0.71	1.43

Foreign studies have shown that patients heal equally well with 150 mg b.i.d. and 300 mg h.s. (85% versus 84%, respectively) during a usual 4-week course of therapy. If patients require extended therapy of 8 weeks, the healing rate may be higher for 150 mg b.i.d. as compared to 300 mg h.s. (92% versus 87%, respectively).

Studies have been limited to short-term treatment of acute duodenal ulcer. Patients whose ulcers healed during therapy had recurrences of ulcers at the usual rates.

**Maintenance Therapy in Duodenal Ulcer:** Ranitidine has been found to be effective as maintenance therapy for patients following healing of acute duodenal ulcers. In two independent, double-blind, multicenter, controlled trials, the number of duodenal ulcers observed was significantly less in patients treated with ranitidine (150 mg h.s.) than in patients treated with placebo over a 12-month period.

#### Duodenal Ulcer Prevalence

Double-blind, Multicenter, Placebo-controlled Trials

Multicenter Trial	Drug	Duodenal Ulcer Prevalence			No. of Patients
		0-12 Months			
		0-4 Months	0-8 Months	0-12 Months	
USA	RAN	20%*	24%*	35%*	138
	PLC	44%	54%	59%	139
Foreign	RAN	12%*	21%*	28%*	174
	PLC	56%	64%	68%	165

\* = Life-Table estimate.  
† P < 0.05 (Ranitidine versus comparator).  
RAN = ranitidine.  
PLC = placebo.

As with other H<sub>2</sub>-antagonists, the factors responsible for the significant reduction in the prevalence of duodenal ulcers include prevention of recurrence of ulcers, more rapid healing of ulcers that may occur during maintenance therapy, or both.

**Gastric Ulcer:** In a multicenter, double-blind, controlled, US study of endoscopically diagnosed gastric ulcers, earlier healing was seen in the patients treated with ranitidine as shown in the following table:

	Ranitidine*		Placebo*	
	Number Entered	Healed/Evaluable	Number Entered	Healed/Evaluable
Outpatients				
Week 2		18/83 (19%)		10/83 (12%)
Week 6	82	50/73 (68%)†	94	35/69 (51%)

\* All patients were permitted p.r.n. antacids for relief of pain.  
† P = 0.009.

In this multicenter trial, significantly more patients treated with ranitidine became pain-free during therapy.

**Pathological Hypersecretory Conditions (such as Zollinger-Ellison syndrome):** Ranitidine inhibits gastric acid secretion and reduces occurrence of diarrhea, anorexia, and pain in patients with pathological hypersecretion associated with Zollinger-Ellison syndrome, systemic mastocytosis, and other pathological hypersecretory conditions (i.e., postoperative, "short-gut" syndrome, idiopathic). Use of ranitidine was followed by healing of ulcers in 8 of 19 (42%) patients who were intractable to previous therapy.

**Gastroesophageal Reflux Disease (GERD):** In two multicenter, double-blind, placebo-controlled, 6-week trials performed in the United States and Europe, ranitidine 150 mg b.i.d. was more effective than placebo for the relief of heartburn and other symptoms associated with GERD. Ranitidine-treated patients consumed significantly less antacid than did placebo-treated patients.

The US trial indicated that ranitidine 150 mg b.i.d. significantly reduced the frequency of heartburn attacks and severity of heartburn pain within 1 to 2 weeks after starting therapy. The improvement was maintained throughout the 6-week trial period. Moreover, patient response rates demonstrated that the effect of heartburn extends through both the day and night time periods.

(See Reverse)