These effects were explained by inhibition of the renal tubular secretion of famotidine by probenecid.

1. Inotsume N, *et al.* The inhibitory effect of probenecid on renal excretion of famotidine in young, healthy volunteers. *J Clin Pharmacol* 1990; **30:** 50–6.

Theophylline. Although famotidine is considered not to interfere with the metabolism of other drugs there is a report of a clinically significant interaction with theophylline—see p.1145.

Pharmacokinetics

Famotidine is readily but incompletely absorbed from the gastrointestinal tract with peak concentrations in plasma occurring 1 to 3 hours after oral doses. The bioavailability of oral famotidine is about 40 to 45% and is not significantly affected by the presence of food.

The elimination half-life from plasma is reported to be about 3 hours and is prolonged in renal impairment. Famotidine is weakly bound, about 15 to 20%, to plasma proteins. A small proportion of famotidine is metabolised in the liver to famotidine *S*-oxide. About 25 to 30% of an oral dose, and 65 to 70% of an intravenous dose, is excreted unchanged in the urine in 24 hours, primarily by active tubular secretion. Famotidine is also found in breast milk.

◊ Reviews.

1. Echizen H, Ishizaki T. Clinical pharmacokinetics of famotidine. *Clin Pharmacokinet* 1991; **21:** 178–94.

Children. Famotidine 300 micrograms/kg intravenously was given to 10 children aged 2 to 7 years, after cardiac surgery and before extubation, to prevent aspiration.[1] This dose (equivalent to about 20 mg in adults) induced a rise in the intragastric pH within 1 hour of being given and the pH remained above 3.5 for about 9 hours. The mean elimination half-life was 3.3 hours, similar to the value in healthy adults and it was considered that doses in children need therefore only be adjusted according to bodyweight and renal function. This conclusion was supported by a review of 8 studies in children over 1 year of age.[2] Conversely, in infants aged 5 to 19 days, the mean elimination half-life was prolonged (10.5 hours) secondary to reduced renal clearance.[3] This was confirmed by another study,[4] which indicated that reduced clearance was found in infants under 3 months of age, but that pharmacokinetics in older infants were similar to those previously reported for children and adults.

1. Kraus G, *et al.* Famotidine: pharmacokinetic properties and suppression of acid secretion in paediatric patients following cardiac surgery. *Clin Pharmacokinet* 1990; **18:** 77–81.
2. James LP, Kearns GL. Pharmacokinetics and pharmacodynamics of famotidine in paediatric patients. *Clin Pharmacokinet* 1996; **31:** 103–10.
3. James LP, *et al.* Pharmacokinetics and pharmacodynamics of famotidine in infants. *J Clin Pharmacol* 1998; **38:** 1089–95. Correction. *ibid.* 2000; **40:** 1298.
4. Wenning LA, *et al.* Pharmacokinetics of famotidine in infants. *Clin Pharmacokinet* 2005; **44:** 395–406.

Distribution into breast milk. The peak concentration of famotidine in breast milk, which occurred in 8 women 6 hours after an oral dose of 40 mg, was similar to the peak plasma concentration which occurred 2 hours after the dose.[1]

1. Courtney TP, *et al.* Excretion of famotidine in breast milk. *Br J Clin Pharmacol* 1988; **26:** 639P.

Enterohepatic recirculation. Some individuals have a second peak in the plasma concentration of famotidine, which could be due to enterohepatic recirculation. However, a maximum of 0.43% of a dose of famotidine was excreted in the bile of 2 patients following single doses of 20 mg intravenously or 40 mg by mouth indicating that significant recirculation had not occurred.[1]

1. Klotz U, Walker S. Biliary excretion of H -receptor antagonists. *Eur J Clin Pharmacol* 1990; **39:** 91–2.

Uses and Administration

Famotidine is a histamine H_2-antagonist with actions and uses similar to those of cimetidine (see p.1719).

Famotidine may be given orally or intravenously.

In the management of benign **gastric** and **duodenal ulceration** (p.1702) the dose is 40 mg daily orally at bedtime, for 4 to 8 weeks. A dose of 20 mg twice daily has also been given. A maintenance dose of 20 mg at bedtime may be given to prevent recurrence of duodenal ulceration. In **gastro-oesophageal reflux disease** (p.1696) the recommended oral dose is 20 mg twice daily for 6 to 12 weeks, or up to 40 mg twice daily if there is oesophageal ulceration. A maintenance dose of 20 mg twice daily may be given to prevent recurrence. For the short-term symptomatic relief of heartburn or non-ulcer **dyspepsia** (p.1695) a dose of 10 mg up to twice daily is suggested. In the **Zollinger-Ellison syndrome** (p.1704) the initial oral dose is 20 mg every 6 hours, increased as necessary; doses up to 800 mg daily have been used.

The usual dose of famotidine by the intravenous route is 20 mg and may be given by injection over at least 2 minutes or as an infusion over 15 to 30 minutes; the dose may be repeated every 12 hours.

Doses of famotidine should be reduced in patients with renal impairment (see below).

Administration. Although famotidine is most usually given as a film-coated tablet, an alternative wafer formulation, designed to dissolve on the tongue without the need for water, has also been developed.[1]

Parenteral formulations of famotidine are also available in some countries. Although licensed product information recommends that intravenous injections be given over at least 2 minutes, a study that compared rapid intravenous injection (over up to 1 minute) with slow intravenous infusion found both to be safe.[2] Continuous infusion has however been reported by others[3] to be more effective in the prevention of stress ulceration than bolus injection.

1. Schwartz JI, *et al.* Novel oral medication delivery system for famotidine. *J Clin Pharmacol* 1995; **35:** 362–7.
2. Fish DN. Safety and cost of rapid iv injection of famotidine in critically ill patients. *Am J Health-Syst Pharm* 1995; **52:** 1889–94.
3. Baghaie AA, *et al.* Comparison of the effect of intermittent administration and continuous infusion of famotidine on gastric pH in critically ill patients: results of a prospective, randomized, crossover study. *Crit Care Med* 1995; **23:** 687–91.

Administration in renal impairment. The dosage of famotidine should be reduced in patients with renal impairment. In the UK, a 50% reduction is suggested for patients whose creatinine clearance is less than 10 mL/minute; in the USA this reduction is recommended in all those with creatinine clearance less than 50 mL/minute. Alternatively, the dosage interval may be prolonged to 36 to 48 hours.

Immunomodulation. *MALIGNANT NEOPLASMS.* References[1-3] to the use of adjuvant famotidine in patients with malignant neoplasms, including use with interleukin-2 infusions.[2,3]

1. Parshad R, *et al.* Effect of preoperative short course famotidine on TILs and survival in breast cancer. *Indian J Cancer* 2005; **42:** 185–90.
2. Quan WD, *et al.* Continuous infusion interleukin-2 and famotidine in metastatic kidney cancer. *Cancer Biother Radiopharm* 2006; **21:** 515–19.
3. Quan WD, *et al.* Continuous infusion interleukin-2 and intravenous famotidine in metastatic melanoma. *Cancer Biother Radiopharm* 2006; **21:** 607–12.

Schizophrenia. There are reports of improvement in schizophrenic symptoms (p.955) in patients given famotidine.[1-4]

1. Kaminsky R, *et al.* Effect of famotidine on deficit symptoms of schizophrenia. *Lancet* 1990; **335:** 1351–2.
2. Rosse RB, *et al.* Famotidine adjunctive pharmacotherapy of schizophrenia: a case report. *Clin Neuropharmacol* 1995; **18:** 369–74.
3. Rosse RB, *et al.* An open-label study of the therapeutic efficacy of high-dose famotidine adjuvant pharmacotherapy in schizophrenia: preliminary evidence for treatment efficacy. *Clin Neuropharmacol* 1996; **19:** 341–8.
4. Martinez MC. Famotidine in the management of schizophrenia. *Ann Pharmacother* 1999; **33:** 742–7.

Preparations

BP 2008: Famotidine Tablets;
USP 31: Famotidine for Oral Suspension; Famotidine Injection; Famotidine Tablets.

Proprietary Preparations (details are given in Part 3)
Arg.: Ulcelac; ***Austral.:*** Amfamox†; Ausfam; Famohexal; Pamacid; Pepcid†; Pepcidine; Pepzan; ***Austria:*** Eradix; Famohexal; Famosin; Pepcid; Sodexx Famotidine; Tetacid; Ulcusan; ***Belg.:*** Pepcidine†; ***Braz.:*** Famodine†; Famoset; Famotid; Famotil†; Famox; Famoxil†; ***Canad.:*** Acid Control; Acid Halt; Maalox H Acid Controller; Pepcid; Peptic Guard; Ulcidine†; ***Chile:*** Anulbet†; Fibonel†; Gastrium; ***Cz.:*** Famosan; Quamatel; Ulceran†; Ulfamid; ***Denm.:*** Pepcidin†; ***Fin.:*** Pepcid; Pepcidin; ***Fr.:*** Pepcidac; Pepdine; ***Ger.:*** Fadul; Famo; Famobeta; Famonerton; Pepcid†; Pepdul; ***Gr.:*** Ansilan; Banatin; Cepal†; Esseldon; Gasterogen; Imposergon; Mostrelan; Panalba; Peptan; Rosagenus; Sedanium-R; Vexurat; ***Hong Kong:*** Ausfam; Beilande; Fadine; Famine; Famocid; Famodine; Famolta; Famopsin; Famotin; Famox; Gastrodomina; LAfamo; Marmodine; Motidine; Pepcidine; Phyzidine; Quamatel; Servipep†; Ulceran†; Vida Famodine; ***Hung.:*** Motidin; Peptigal†; Quamatel; Servipep†; ***India:*** Blocacid†; Fadine; Famodin; Famonite; Famowal; Famtac; Fudone; Ulcimax; ***Indon.:*** Antidine; Corocyd; Denufam; Faberdin; Facid; Famocid; Fluktan; Gasfamin; Gaster; Gestofam; Ifamul; Interfam; Lexmodine; Nulcefam; Pompaton; Promocid; Purifam; Regastin; Renapepsa; Tismafam; Ulcerid; Ulfam; Ulmo; ***Irl.:*** Pepcid; ***Israel:*** Apogastine; Famo; Gastro; Rogasti; Zarex†; ***Ital.:*** Famodil; Gastridin; Motiax; ***Jpn:*** Gaster; ***Malaysia:*** Acidine†; Fadine†; Famopsin; Pepcidine; Pepzan; Ulceran; Voker; ***Mex.:*** Adiatin; Amofat†; Androtin; Durater; Eufatin†; Fabutin; Fagatrim†; Famoxal; Fatoril†; Fawodin†; Ludex; Pepcidine; Sertidine; Sigafam†; Ultidin; ***Neth.:*** Pepcid; Pepcidin; ***Norw.:*** Famotal; Pepcid; Pepcidin; ***NZ:*** Famox; Pepcid†; Pepcidine†; Pepzan; ***Philipp.:*** Famorila; Famtine; H2 Bloc; Hista-Bloc; Motid; Pepcidine; Ulcefam; ***Pol.:*** Famidyna; Famogast; Quamatel; Ulfamid; ***Port.:*** Digeslit†; Dinul; Dipsin; Fatidin; Gastopride†; Gastrifam†; Lasa; Mensoma; Nulceran†; Pepcidina; ***Rus.:*** Famocid (Фамоцид); Famonit (Фамонит); Famosan (Фамосан); Gastrosidin (Гастросидин); Quamatel (Квамател); Ulceran (Ульцеран); Ulfamid (Ульфамид); ***Singapore:*** Blocacid†; Famoc; Famopril; Famopsin†; Famotin; Famox†; Motidine; Pepcidine; Pepzan; Ulceran; ***Spain:*** Brolin†; Confobos; Cronol; Digervin; Dispromil†; Eviantrina; Fagastril; Famokey; Famulcer; Fanosin†; Fanox†; Gastenin; Gastrion; Gastrodomina; Gastropen†; Ingastri; Invigan; Nos†; Nulcerin; Pepcid; Rubacina; Tairal; Tamin; Tipodex; Ulcetrax†; Ulgarine; Vagostal; ***Swed.:*** Pepcid; Pepcidin; ***Switz.:*** Pepcid†; Pepcidine†; ***Thai.:*** Agufam; Fadine†; Famoc; Famocid†; Famonox; Famopsin; Famosia; Famotab; Famotin†; Fasidine; Motidine; Pepcidine; Pepcine; Pepdenal; Pepfamin; Peptoci; Pepzan†; Pharmotidine†; Ulceran; Ulcofam†; Ulfamet; ***Turk.:*** Duovel; Famec; Famo; Famodin; Famogast; Famoser; Famotep; Famotsan; Gasterol; Gastifam; Gastrofam; Gastrosidin; Neotab; Nevofam; Notidin; Pepdif; ***UAE:*** Famotec; ***UK:*** Pepcid; Ultra Heartburn Relief; ***USA:*** Mylanta AR Acid Reducer†; Pepcid; ***Venez.:*** Dinamot; Fadipina†; Famogel; Famulcer; Isomina; Klinotal; Medalin; Neutracid; Pepcidine†; Ulcenol.

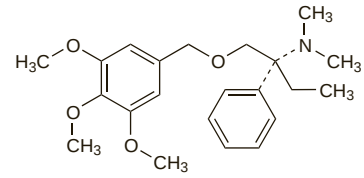
Multi-ingredient: ***Arg.:*** Actual; Megalex Antiacido; Mylanta Extra; ***Canad.:*** Pepcid Complete; ***Fin.:*** Pepcid Duo; ***Fr.:*** Pepcidduo; ***Ger.:*** Pepciddual; ***Indon.:*** Neosanmag Fast; Promag Double Action; ***Ital.:*** Pepciddual; ***Mex.:*** Facidex Total; ***Norw.:*** Pepcidduo; ***Spain:*** Pepdual; ***Swed.:*** Pepcid Duo; ***UK:*** Pepcidtwo; ***USA:*** Pepcid Complete.

Fedotozine *(rINN)*

Fedotozina; Fédotozine; Fedotozinum; JO-1196 (tartrate). (+)-(*R*)-α-Ethyl-*N*,*N*-dimethyl-α-{[(3,4,5-trimethoxybenzyl)oxy]methyl}benzylamine.

Федотозин

$C_{22}H_{31}NO_4$ = 373.5.
CAS — 123618-00-8 (fedotozine); 133267-27-3 (fedotozine tartrate).



Profile

Fedotozine is a peripherally acting selective agonist of opioid κ-receptors that has been investigated in dyspepsia and the irritable bowel syndrome.

◊ References.

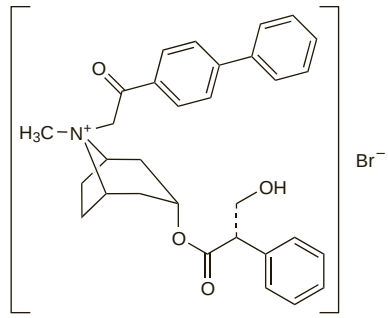
1. Delvaux M. Pharmacology and clinical experience with fedotozine. *Expert Opin Invest Drugs* 2001; **10:** 97–110.

Fentonium Bromide *(rINN)*

Bromuro de fentonio; Fa-402; Fentonii Bromidum; Fentonium, Bromure de; Ketoscilium; *N*-(4-Phenylphenacyl)-1-hyoscyaminium Bromide; Z-326. (−)-(1*R*,3*r*,5*S*)-8-(4-Phenylphenacyl)-3-[(*S*)-tropoyloxy]tropanium bromide.

Фентония Бромид

$C_{31}H_{34}BrNO_4$ = 564.5.
CAS — 5868-06-4.
ATC — A03BB04.
ATC Vet — QA03BB04.



Profile

Fentonium bromide is a quaternary ammonium antimuscarinic with peripheral effects similar to those of atropine (p.1219). It has been used to relieve visceral spasms.

Fig

Carica; Ficus; Higo.

Инжир; Фикус

Pharmacopoeias. In *Br.* and *Swiss*.
BP 2008 (Fig). The sun-dried succulent fruit of *Ficus carica* containing not less than 60.0% of water-soluble extractive. Store in a dry place.

Profile

Fig is a mild laxative and demulcent usually used with other laxatives.