105% of $Al_5Mg_{10}(OH)_{31}(SO_4)_2$, calculated on the dried basis. A white odourless crystalline powder. Insoluble in water and in alcohol; soluble in dilute solutions of mineral acids. It loses between 10 and 20% of its weight on drying at 200° for 4 hours.

Profile
Magaldrate is an antacid (see p.1692) that is given in oral doses of up to about 2 g.

Preparations
BP 2008: Magaldrate Oral Suspension;
USP 31: Magaldrate and Simethicone Oral Suspension; Magaldrate and Simethicone Tablets; Magaldrate Oral Suspension; Magaldrate Tablets.

Proprietary Preparations (details are given in Part 3)
Arg.: Riopan; ***Austria:*** Riopan; ***Belg.:*** Gastricalm; Riopan; ***Braz.:*** Riopan; ***Cz.:*** Marax†; ***Fr.:*** Riopan; ***Ger.:*** Gastripan; Gastrostad†; Glysan; Hevert-Mag; Magastron; Marax; Riopan; Simaphil; ***Gr.:*** Felfar; Riopan; ***Ital.:*** Gadral; Magaltop; Magralibi; Riopan; ***Pol.:*** Malugastrin; ***Port.:*** Riopan; ***Rus.:*** Magalphil (Магалфил); ***S.Afr.:*** Riopone; ***Spain:*** Bemolan; Gastromol; Magion; Minoton; ***Switz.:*** Riopan; ***USA:*** Iosopan; Riopan; ***Venez.:*** Cremag.

Multi-ingredient: ***Arg.:*** Aci-Tip; Carbogasol Antiacido†; ***Austral.:*** Mylanta Heartburn Relief†; ***Braz.:*** Riopan Plus; ***Chile:*** Aci-Tip†; Antiax; ***Hong Kong:*** Nilcid-MPS†; ***India:*** Maglid; pH4; Rolac Plus; Ulgel†; ***Indon.:*** Asidrat; Magalat; Nudramag; ***Mex.:*** Nilcid†; Riopan; ***Spain:*** Compagel†; ***Turk.:*** Asidopan Plus; Simelgat Plus; ***UK:*** Bisodol Extra; Bisodol Heartburn Relief; ***USA:*** Iosopan Plus; Lowsium Plus; Riopan Plus; ***Venez.:*** Cremalon.

Magnesium Carbonate

Bázisos magnézium-karbonát; E504; Magnesii Carbonas; Magnesii subcarbonas; Magnesio, carbonato de; Magnésium, carbonate de; Magnesiumsubkarbonaatti; Magnesiumsubkarbonat; Magnezu węglan; Magnezyum Karbonate; Magnio subkarbonatas; Uhličitan hořečnatý zásaditý.

Магния Карбонат

CAS — 546-93-0 (anhydrous magnesium carbonate); 23389-33-5 (hydrated normal magnesium carbonate); 39409-82-0 (hydrated basic magnesium carbonate).

ATC — A02AA01; A06AD01.

ATC Vet — QA02AA01; QA06AD01.

Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Jpn*, *US*, and *Viet.* Some pharmacopoeias include a single monograph that permits both the light and heavy varieties while some have 2 separate monographs for the 2 varieties.

Ph. Eur. 6.2 (Magnesium Carbonate, Heavy; Magnesii Subcarbonas Ponderosus). A hydrated basic magnesium carbonate containing the equivalent of 40 to 45% of MgO. A white or almost white powder. 15 g has an apparent volume before settling of not more than 60 mL. Practically insoluble in water; dissolves in dilute acids with strong effervescence.

Ph. Eur. 6.2 (Magnesium Carbonate, Light; Magnesii Subcarbonas Levis). A hydrated basic magnesium carbonate containing the equivalent of 40 to 45% of MgO. A white or almost white powder. 15 g has an apparent volume before settling of at least 100 mL. Practically insoluble in water; dissolves in dilute acids with strong effervescence.

USP 31 (Magnesium Carbonate). A basic hydrated magnesium carbonate or a normal hydrated magnesium carbonate containing the equivalent of 40.0 to 43.5% of MgO. It is an odourless, bulky white powder or light, white, friable masses. Practically insoluble in water; insoluble in alcohol; dissolves in dilute acids with effervescence.

Profile
Magnesium carbonate is an antacid with general properties similar to those of magnesium hydroxide (below) that is given in oral doses of up to about 500 mg. When given orally, it reacts with gastric acid to form soluble magnesium chloride and carbon dioxide in the stomach; the carbon dioxide may cause flatulence and eructation. Magnesium carbonate is often given with aluminium-containing antacids such as aluminium hydroxide, which counteract its laxative effect.

Magnesium carbonate may be used as a magnesium supplement. It is also used as a food additive.

Preparations
BP 2008: Aromatic Magnesium Carbonate Mixture; Compound Magnesium Trisilicate Oral Powder; Kaolin Mixture; Magnesium Sulphate Mixture; Magnesium Trisilicate Mixture;
USP 31: Alumina and Magnesium Carbonate Oral Suspension; Alumina and Magnesium Carbonate Tablets; Alumina, Magnesium Carbonate, and Magnesium Oxide Tablets; Calcium and Magnesium Carbonates Oral Suspension; Calcium and Magnesium Carbonates Tablets; Magnesium Carbonate and Citric Acid for Oral Solution; Magnesium Carbonate and Sodium Bicarbonate for Oral Suspension; Magnesium Carbonate, Citric Acid, and Potassium Citrate for Oral Solution; Magnesium Citrate Oral Solution.

Proprietary Preparations (details are given in Part 3)
Arg.: Polvo Roge; ***Austria:*** Magnofit; ***Fr.:*** Mag 2; Mag 2 Junior; Sargemag; ***Ger.:*** Biolectra Magnesium 365; Palmicol; ***Gr.:*** Limonata Citromagnes; ***Hung.:*** Magnosolv; ***Ital.:*** Magnofit; ***Pol.:*** Additiva Magnesium; Magnezin; ***S.Afr.:*** Be-Lax; ***Switz.:*** Magnesium Nutrimed; ***USA:*** Mag-Carb.

Multi-ingredient: numerous preparations are listed in Part 3.

Used as an adjunct in: ***Arg.:*** Bufferin†; Dristan Analgesico†; Dristan Compuesto; ***Braz.:*** Bufferin; Somalgin; ***Canad.:*** Aspirin with Stomach Guard; Bufferin; Tri-Buffered ASA; ***Ital.:*** Bufferin†; ***USA:*** Adprin-B; Bufferin; Buffex; Extra Strength Bayer Plus.

Magnesium Citrate

Magnesii citras; Magnesio, citrato de; Magnésium, citrate de.

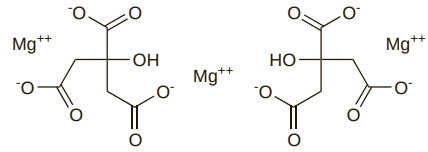
Магний Цитрат

$C_{12}H_{10}Mg_3O_{14}$ = 451.1.

CAS — 3344-18-1.

ATC — A06AD19; A12CC04; B05CB03.

ATC Vet — QA06AD19; QA12CC04; QB05CB03.



Pharmacopoeias. In *Eur.* (see p.vii) and *US*.

Ph. Eur. 6.2 (Magnesium Citrate, Anhydrous). A white or almost white, fine, slightly hygroscopic powder. Soluble in water; practically insoluble in alcohol. It dissolves in dilute hydrochloric acid. Store in non-metallic, airtight containers.

USP 31 (Magnesium Citrate). A 5% suspension in water has a pH of 5.0 to 9.0. Store in airtight containers.

Profile
Magnesium citrate is an osmotic laxative (p.1693) used as a bowel evacuant before investigational procedures or surgery of the colon. Dosages have ranged from about 11 to 25 g of magnesium citrate. In the UK, an aqueous solution containing magnesium citrate is prepared from a sachet (*Citramag*) containing about 11.6 g of magnesium carbonate and about 17.8 g of anhydrous citric acid by mixing with 200 mL of hot water. After the solution has cooled, one dose (the contents of one sachet) is taken by mouth at 8 a.m. the day before the procedure, and a second dose between 2 and 4 p.m. For doses in children, see below. A high fluid intake and low residue diet are needed with such bowel preparations. Magnesium citrate is also used with sodium picosulfate, p.1771.

Magnesium citrate is given as a magnesium supplement in doses of up to about 1.9 g daily by mouth.

For the general properties of magnesium salts, see p.1678.

Administration in children. The *BNFC* recommends the following oral doses of magnesium citrate (*Citramag*) for use as a bowel cleanser in children, to be taken on the day before the procedure:

- 5 to 10 years: ⁄ of a sachet at 8 a.m. and ⁄ of a sachet between 2 and 4 p.m.
- 10 to 18 years: ⁄ to 1 sachet at 8 a.m. and ⁄ to 1 sachet between 2 and 4 p.m.

For reconstitution directions, see above.

Migraine. For mention of the use of magnesium supplementation, including magnesium citrate, for the prophylaxis of migraine, see p.1681.

Preparations
USP 31: Magnesium Citrate for Oral Solution.

Proprietary Preparations (details are given in Part 3)
Arg.: Holomagnesio; Limonada Roge; ***Austral.:*** Mag Cit Prep†; ***Austria:*** Magnesium Diasporal; Magnofit; ***Belg.:*** Magnetop†; ***Canad.:*** Citro-Mag; Mag-Citrate; ***Cz.:*** Magnesium Diasporal†; Magnesolt†; ***Ger.:*** Magnesium Diasporal; Magnesium Verla N; Presselin Heilozon P†; ***Hong Kong:*** Citro-Mag†; ***Hung.:*** Magnesium Diasporal†; ***Pol.:*** Magnesol; ***Switz.:*** Magnegon; Magnesium Biomed; Magnesium Diasporal; Magnesium-Sandoz; ***UK:*** Citramag; ***USA:*** Evac-Q-Mag.

Multi-ingredient: ***Arg.:*** Holomagnesio B6; Magnebe; Total Magnesiano B6; ***Austral.:*** Go Kit; Go Kit Plus†; ***Austria:*** Magnosolv; ***Belg.:*** Carbobel; ***Canad.:*** Royvac Kit; ***Chile:*** Laxogeno; ***Fr.:*** Citrocholine; Magne-B ; ***Ger.:*** Acidovert†; Lithurex S†; Magnerot N; ***Gr.:*** Magnesium Sandoz; ***Hung.:*** Beres Magnezium + B ; Magurlit†; Pregmag; ***Irl.:*** Picolax; ***Ital.:*** Pomag; ***Spain:*** Salmagne; ***UK:*** CitraFleet; Picolax.

Magnesium Hydroxide

E528; Hydroxid hořečnatý; Magnesii hydroxidum; Magnesio, hidróxido de; Magnesium Hydrate; Magnésium, hydroxyde de; Magnesiumhydroksidi; Magnesiumhydroxid; Magnézium-hidroxid; Magnezyum Hidroksit; Magnio hidroksidas.

Магния Гидроксид

$Mg(OH)_2$ = 58.32.

CAS — 1309-42-8.

ATC — A02AA04; G04BX01.

ATC Vet — QA02AA04; QG04BX01.

NOTE. Compounded preparations of magnesium hydroxide may be represented by the following names:

- Co-magaldrox *x/y* (*BAN*)—where *x* and *y* are the strengths in milligrams of magnesium hydroxide and aluminium hydroxide respectively.

Pharmacopoeias. In *Eur.* (see p.vii), *Int.*, *US*, and *Viet.*

Ph. Eur. 6.2 (Magnesium Hydroxide). A fine white or almost white amorphous powder. Practically insoluble in water; dissolves in dilute acids. A solution in water is alkaline to phenolphthalein.

USP 31 (Magnesium Hydroxide). A bulky white powder. Practically insoluble in water, in alcohol, in chloroform, and in ether; soluble in dilute acids. Store in airtight containers.

Adverse Effects, Treatment, and Precautions
As for magnesium salts in general, see p.1679. Magnesium hydroxide may cause diarrhoea, an effect that is dose-dependent. Hypermagnesaemia may occur, usually in patients with renal impairment.

Hypermagnesaemia. There have been reports of hypermagnesaemia in infants given magnesium-containing antacids,[1-3] and in an adult patient with normal renal function but bowel obstruction.[4]

1. Brand JM, Greer FR. Hypermagnesemia and intestinal perforation following antacid administration in a premature infant. *Pediatrics* 1990; **85:** 121–4.
2. Alison LH, Bulugahapitiya D. Laxative induced magnesium poisoning in a 6 week old infant. *BMJ* 1990; **300:** 125.
3. Sullivan JE, Berman BW. Hypermagnesemia with lethargy and hypotonia due to administration of magnesium hydroxide to a 4-week-old infant. *Arch Pediatr Adolesc Med* 2000; **154:** 1272–4.
4. Laughlin SA, McKinney PE. Antacid-induced hypermagnesemia in a patient with normal renal function and bowel obstruction. *Ann Pharmacother* 1998; **32:** 312–15.

Interactions
As outlined on p.1692, antacids, including magnesium salts, interact with many other drugs both by alterations in gastric pH and emptying, and by formation of complexes that are not absorbed. Interactions can be minimised by giving the antacid and any other medications 2 to 3 hours apart.

Pharmacokinetics
Magnesium hydroxide, given orally, reacts relatively rapidly with hydrochloric acid in the stomach to form magnesium chloride and water. About 30% of the magnesium ions are absorbed from the small intestine, as described for Magnesium Salts, p.1680.

Uses and Administration
Magnesium hydroxide is an antacid (see p.1692) that is given in oral doses of up to about 1 g. It is often given with aluminium-containing antacids such as aluminium hydroxide which counteract its laxative effect.

Magnesium hydroxide is also given as an osmotic laxative (p.1693) in oral doses of about 2 to 5 g.

Magnesium hydroxide has also been used as a food additive and as a magnesium supplement in deficiency states.

Preparations
BP 2008: Co-magaldrox Oral Suspension; Co-magaldrox Tablets; Liquid Paraffin and Magnesium Hydroxide Oral Emulsion; Magnesium Hydroxide Mixture;
USP 31: Alumina and Magnesia Oral Suspension; Alumina and Magnesia Tablets; Alumina, Magnesia, and Calcium Carbonate Oral Suspension; Alumina, Magnesia, and Calcium Carbonate Tablets; Alumina, Magnesia, and Simethicone Oral Suspension; Alumina, Magnesia, and Simethicone Tablets; Alumina, Magnesia, Calcium Carbonate, and Simethicone Tablets; Aspirin, Alumina, and Magnesia Tablets; Calcium Carbonate and Magnesia Tablets; Calcium Carbonate, Magnesia, and Simethicone Tablets; Magnesia Tablets; Magnesium Hydroxide Paste; Milk of Magnesia.

Proprietary Preparations (details are given in Part 3)
Arg.: Leche de Magnesia Phillips; Magnesia San Pellegrino; ***Braz.:*** Leite de Magnesia de Phillips; Leite de Magnesia†; Magnesiol†; Mylanta Plus; ***Canad.:*** Milk of Magnesia; Phillips' Magnesia Tablets; Phillips' Milk of Magnesia; ***Chile:*** Leche de Magnesia Phillips; Magnesia Pasteur; Tabletas Antiacidas; ***Denm.:*** Magnesia; ***Fin.:*** Emgesan; Magnesiamaito; ***Fr.:*** Carbonex; Magnesie S Pellegrino†; ***Gr.:*** Milk of Magnesia; ***Hung.:*** Antagel M; ***India:*** Tricaine-MPS; ***Indon.:*** Laxasium; ***Irl.:*** Milk of Magnesia; ***Israel:*** Magnesia S Pellegrino; Milk of Magnesia; ***Ital.:*** Citrato Espresso S. Pellegrino; Magnesia S Pellegrino; Magnesia Volta†; ***Mex.:*** Leche de Magnesia Normex; ***Port.:*** Leite Magnesia Phillips; Magnesia San Pellegrino; ***S.Afr.:*** Babys own Tummy Tablets; Deopens†; ***Spain:*** Magnesia; Magnesia San Pellegrino; ***Swed.:*** Emgesan; ***Switz.:*** Magnesia S Pellegrino; ***Thai.:*** Milk of Magnesia; ***Turk.:*** Magcine; Magnesie Calcinee; Magnesium Naneli Lafar; Magnokal; ***UK:*** Milk of Magnesia; ***USA:*** Dulcolax; Milk of Magnesia; Pedia-Lax; Phillips' Chewable; Phillips' Milk of Magnesia; ***Venez.:*** Magnesia San Pellegrino.

Multi-ingredient: numerous preparations are listed in Part 3.

Used as an adjunct in: ***Canad.:*** C2 with Codeine†; ***Denm.:*** Kodamid; Kodimagnyl; Magnyl; ***Gr.:*** Ascriptin†; ***Indon.:*** Naspro; Rheumapill; ***Israel:*** Ascriptin†; ***Ital.:*** Ascriptin; Aspirina 03; ***Mex.:*** Ascriptin; ***USA:*** Arthritis Pain Formula; Ascriptin; Asprimox; Cope; Magnaprin†; Vanquish; ***Venez.:*** Ascriptin.

Magnesium Oxide

E530; Magnesii oxidum; Magnesio, óxido de; Magnésium, oxyde de; Magnesiumoksidi; Magnesiumoxid; Magnezu tlenek; Magnezyum Oksit; Magnio oksidas; Nehéz magnézium; Oxid hořečnatý.

Магния Оксид

MgO = 40.30.

CAS — 1309-48-4.

ATC — A02AA02; A06AD02; A12CC10.

ATC Vet — QA02AA02; QA06AD02; QA12CC10.

Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Int.*, *Jpn*, *US*, and *Viet.* Some pharmacopoeias include a single monograph that permits both the light and heavy varieties while some have 2 separate monographs for the 2 varieties.

Ph. Eur. 6.2 (Magnesium Oxide, Heavy; Magnesii Oxidum Ponderosum). A fine, white or almost white powder. 15 g has an apparent volume before settling of not more than 60 mL. Practically insoluble in water; dissolves in dilute acids with at most slight effervescence.

Ph. Eur. 6.2 (Magnesium Oxide, Light; Magnesii Oxidum Leve). A fine, white or almost white, amorphous powder. 15 g has an apparent volume before settling of at least 100 mL. Practically insoluble in water; dissolves in dilute acids with at most slight effervescence.

USP 31 (Magnesium Oxide). A very bulky, white powder, or a relatively dense, white powder, or a granulated powder. Practically insoluble in water; insoluble in alcohol; soluble in dilute acids. Store in airtight containers.

Profile

Magnesium oxide is an antacid with general properties similar to those of magnesium hydroxide (above). It is given in usual oral doses of about 400 mg. It is often given with aluminium-containing antacids such as aluminium hydroxide, which counteract its laxative effect.

Magnesium oxide has been used for its osmotic laxative properties in bowel preparation; oral doses of 3.5 g are given for this purpose, combined with bisacodyl or sodium picosulfate.

Magnesium oxide is also used as a magnesium supplement in deficiency states in oral doses of up to 800 mg (20 mmol) daily. It is also used as a food additive.

Preparations

USP 31: Alumina, Magnesium Carbonate, and Magnesium Oxide Tablets; Aromatic Cascara Fluidextract; Aspirin, Alumina, and Magnesium Oxide Tablets; Citric Acid, Magnesium Oxide, and Sodium Carbonate Irrigation; Magnesium Oxide Capsules; Magnesium Oxide Tablets.

Proprietary Preparations (details are given in Part 3)

Arg.: Magneforte†; Polvo Roge; SG 33; ***Austria:*** Magnonorm; Magnotab; ***Denm.:*** Salilax; ***Fr.:*** Mag 2 Junior; Magocean; Sargemag; Thalamag; ***Ger.:*** Biolectra Magnesium 240; Biolectra Magnesium 365; Magium; Magnesium Diasporal; Magnesium Tonil; Magnetrans extra; Magnetrans forte; Magno Sanol; ***Hung.:*** Magnosolv; ***NZ:*** Mylanta Effervescent†; ***S.Afr.:*** Solumag; ***Swed.:*** Salilax; ***Thai.:*** Magoral; ***Turk.:*** Magnezi Kalsine; ***USA:*** Mag-200; Mag-Caps; Mag-Ox; Maox; Uro-Mag.

Multi-ingredient: numerous preparations are listed in Part 3.

Used as an adjunct in: ***Arg.:*** Aspirina; Bufferin†; ***Braz.:*** Bufferin; ***Canad.:*** Aspirin with Stomach Guard; Bufferin; Tri-Buffered ASA; ***Ital.:*** Bufferin†; ***Pol.:*** Aspimag; Cardiofil; ***USA:*** Adprin-B; Bufferin; Cama Arthritis Pain Reliever; Extra Strength Bayer Plus.

Magnesium Trisilicate

E553(a); Magnesii trisilicas; Magnesio, trisilicato de; Magnésium, trisilicate de; Magnesiumtrisilikaatti; Magnesiumtrisilikat; Magnézium-trisziliká́t; Magnezyum Trisilikat; Magnio trisilikatas; Trikřemičitan hořečnatý.

Магния Трисиликат

CAS — 14987-04-3 (anhydrous magnesium trisilicate); 39365-87-2 (magnesium trisilicate hydrate).

Description. Magnesium trisilicate is a hydrated magnesium silicate. The code E553(a) has been applied to both magnesium silicate and to magnesium trisilicate.

Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *US*, and *Viet.*

Ph. Eur. 6.2 (Magnesium Trisilicate). It has a variable composition corresponding approximately to the formula $Mg_2Si_3O_8.xH_2O$ containing not less than 29% of magnesium oxide and not less than the equivalent of 65% of silicon dioxide, both calculated with reference to the ignited substance. A white or almost white powder. Practically insoluble in water and in alcohol.

USP 31 (Magnesium Trisilicate). A compound of magnesium oxide and silicon dioxide with varying proportions of water. It contains not less than 20% of magnesium oxide and not less than 45% of silicon dioxide. A fine, white, odourless, powder, free from grittiness. Insoluble in water and in alcohol. It is readily decomposed by mineral acids.

Profile

Magnesium trisilicate is a hydrated magnesium silicate. It is an antacid with general properties similar to those of magnesium hydroxide (p.1743). It may be given in typical oral doses of up to about 500 mg as required, although higher doses have been given.. When given orally it reacts more slowly with hydrochloric acid in the stomach than magnesium hydroxide. Magnesium trisilicate is often given with aluminium-containing antacids such as aluminium hydroxide, which counteract its laxative effect.

Magnesium trisilicate is also used as a food additive and as a pharmaceutical excipient.

Effects on the kidneys. The formation of renal calculi containing silica is unusual, but has been reported in a small number of patients. In most of these cases, stone formation was attributed to the prolonged, and sometimes excessive, intake of antacids that contained magnesium trisilicate.[1,2]

1. Haddad FS, Kouyoumdjian A. Silica stones in humans. *Urol Int* 1986; **41:** 70–6.
2. Lee M-H, *et al*. Silica stone—development due to long time oral trisilicate intake. *Scand J Urol Nephrol* 1993; **27:** 267–9.

Preparations

BP 2008: Compound Magnesium Trisilicate Oral Powder; Compound Magnesium Trisilicate Tablets; Magnesium Trisilicate Mixture;
USP 31: Alumina and Magnesium Trisilicate Oral Suspension; Alumina and Magnesium Trisilicate Tablets; Magnesium Trisilicate Tablets.

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: numerous preparations are listed in Part 3.

Used as an adjunct in: ***Swed.:*** Deltison.

Manna

Maná; Manne en Larmes.

Манна

Profile

Manna is the dried exudation from the bark of the European flowering ash, *Fraxinus ornus* (Oleaceae), containing about 40 to 60% of mannitol (p.1330). It has been used as an osmotic laxative.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: Cz.: Dr Theiss Rheuma Creme†; Dr Theiss Schweden Krauter; Naturland Grosser Swedenbitter†; ***Ger.:*** florabio Mann-Feigen-Sirup mit Senna†; florabio Manna-Feigen; Infi-tract†.

Mebeverine Hydrochloride *(BANM, USAN, rINNM)*

CSAG-144; Hidrocloruro de mebeverina; Mébévérine, chlorhydrate de; Mebeverini hydrochloridum. 4-[Ethyl(4-methoxy-α-methylphenethyl)amino]butyl veratrate hydrochloride.

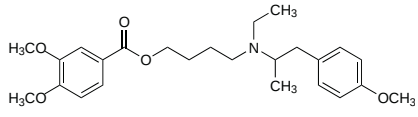
Мебеверина Гидрохлорид

$C_{25}H_{35}NO_5.HCl$ = 466.0.

CAS — 3625-06-7 (mebeverine); 2753-45-9 (mebeverine hydrochloride).

ATC — A03AA04.

ATC Vet — QA03AA04.



(mebeverine)

Pharmacopoeias. In *Br.*

BP 2008 (Mebeverine Hydrochloride). A white or almost white crystalline powder. Very soluble in water; freely soluble in alcohol; practically insoluble in ether. A 2% solution in water has a pH of 4.5 to 6.5. Store in airtight containers at a temperature not exceeding 30°. Protect from light.

Adverse Effects and Precautions

Although adverse effects appear rare, gastrointestinal disturbances, dizziness, headache, insomnia, anorexia, and decreased heart rate have been reported in patients receiving mebeverine. Cases of hypersensitivity, including erythematous rash, urticaria, and angioedema, have also been reported. Mebeverine should be avoided in patients with paralytic ileus. Based on theoretical concerns, it should be used with care in patients with marked hepatic or renal impairment, and those with cardiac disorders such as heart block.

Cystic fibrosis. A 24-year-old man with cystic fibrosis, given mebeverine hydrochloride for lower abdominal pain and constipation, was found to have a perforated stercoral ulcer with generalised peritonitis.[1] It was suggested that mebeverine produced colonic stasis, which predisposed the patient to ulceration,[1] but the manufacturers[2] considered that the development of constipation and distal intestinal syndrome (meconium ileus equivalent) in this patient precipitated the development of stercoral ulceration. It was recommended[1] that antispasmodics such as mebeverine should not be used for the symptomatic treatment of distal intestinal syndrome in cystic fibrosis.

1. Hassan W, Keaney N. Mebeverine-induced perforated colon in distal intestinal syndrome of cystic fibrosis. *Lancet* 1990; **335:** 1225.
2. Whitehead AM. Perforation of colon in distal intestinal syndrome of cystic fibrosis. *Lancet* 1990; **336:** 446.

Porphyria. Mebeverine hydrochloride is considered to be unsafe in patients with porphyria because it has been shown to be porphyrinogenic in *in-vitro* systems.

Pharmacokinetics

Mebeverine is rapidly absorbed after oral doses with peak plasma concentrations occurring in 1 to 3 hours. It is 75% bound to albumin in plasma. Mebeverine is completely metabolised by hydrolysis to veratric acid and mebeverine alcohol, the latter of which may then be conjugated. The metabolites are excreted in the urine.

Uses and Administration

Mebeverine hydrochloride is an antispasmodic with a direct action on the smooth muscle of the gastrointestinal tract. It is used in conditions such as irritable bowel syndrome (p.1699) in a usual oral dose of 135 mg three times daily before meals; 100 mg three times daily has also been used. A modified-release preparation is also available, taken as 200 mg twice daily. The embonate is also used for oral liquid preparations in a dose equivalent to 150 mg of the hydrochloride three times daily. The *BNFC* suggests that the following hydrochloride-equivalent doses may be given three times daily, based on age:

- 25 mg for those aged 3 to 4 years
- 50 mg for those 4 to 8 years
- 100 mg for those 8 to 10 years
- 135 to 150 mg for those over 10 years

Preparations

BP 2008: Mebeverine Tablets.

Proprietary Preparations (details are given in Part 3)

Arg.: Duspatalin; ***Austral.:*** Colese; Colofac; ***Austria:*** Colofac; ***Belg.:*** Duspatalin; Spasmonal†; ***Braz.:*** Duspatalin; ***Chile:*** Doloverina; Duspatal; Evadol; Meditoina; ***Cz.:*** Duspatalin; ***Denm.:*** Duspatalin; ***Fr.:*** Colopriv; Duspatalin; Spasmopriv; ***Ger.:*** Duspatal; Mebemerck; ***Gr.:*** Duspatalin; Gastromins†; ***Hong Kong:*** Duspatalin; ***Hung.:*** Duspatalin; ***India:*** Colospa; ***Indon.:*** Duspatalin; Irbosyd; ***Irl.:*** Colofac; ***Israel:*** Colotal; ***Ital.:*** Duspatal; ***Malaysia:*** Duspatalin; Lezpain; Mebetin; ***Mex.:*** Arluy; ***Neth.:*** Duspatal; ***NZ:*** Colofac; ***Philipp.:*** Duspatalin; ***Pol.:*** Duspatalin; ***Port.:*** Duspatal; ***Rus.:*** Duspatalin (Дюспаталин); ***S.Afr.:*** Bevispas; Colofac; ***Singapore:*** Duspatalin; Mebetin; ***Spain:*** Duspatalin; ***Switz.:*** Duspatalin; ***Thai.:*** Colofac; Duspatin; Menosor; ***Turk.:*** Duspatalin; Duspaverin; ***UK:*** Colofac; Equilon†; IBS Relief†.

Multi-ingredient: ***Hong Kong:*** Fybogel Mebeverine†; ***Irl.:*** Fybogel Mebeverine; ***UK:*** Fybogel Mebeverine.

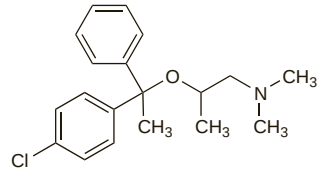
Mecloxamine Citrate *(rINNM)*

Citrato de mecloxamina; Mécloxamine, Citrate de; Mecloxamini Citras. 2-[1-(4-Chlorophenyl)-1-phenylethoxy]-*N*,*N*-dimethyl-1-propanamine citrate.

Меклоксамина Цитрат

$C_{19}H_{24}ClNO.C_6H_8O_7$ = 510.0.

CAS — 5668-06-4 (mecloxamine); 56050-03-4 (mecloxamine citrate).



(mecloxamine)

Profile

Mecloxamine citrate is reported to have antimuscarinic properties and has been used for its antiemetic action in antimigraine preparations.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austria:*** Avamigran; ***Turk.:*** Avmigran.