Molsidomine is metabolised to linsidomine (p.1325), an active metabolite.

Carcinogenicity. Molsidomine tends to degrade into morpholine (even when protected from the light), a compound considered potentially carcinogenic. This finding led to the suspension of marketing of one molsidomine formulation;[1] an earlier temporary suspension was related to evidence of carcinogenicity in some *animals*, although this has not been confirmed in humans.

1. Anonymous. Corvaton Tropfen. *Dtsch Apotheker Ztg* 1989; **129** (49): VI.

Myocardial infarction. Although intravenous nitrates (glyceryl trinitrate or sodium nitroprusside) may be used in the management of acute myocardial infarction (p.1175), molsidomine and its active metabolite linsidomine (a nitric oxide donor) had no effect on mortality.[1]

1. European Study of Prevention of Infarct with Molsidomine (ESPRIM) Group. The ESPRIM trial: short-term treatment of acute myocardial infarction with molsidomine. *Lancet* 1994; **344:** 91–7.

Pharmacokinetics. The pharmacokinetics of molsidomine have been reviewed.[1] Molsidomine is metabolised in the liver to linsidomine and other morpholine derivatives. Prolonged elimination half-lives of molsidomine and linsidomine due to reduced plasma clearance have been reported in patients with liver cirrhosis.[2]

1. Rosenkranz B, *et al.* Clinical pharmacokinetics of molsidomine. *Clin Pharmacokinet* 1996; **30:** 372–84.
2. Spreux-Varoquaux O, *et al.* Pharmacokinetics of molsidomine and its active metabolite, linsidomine, in patients with liver cirrhosis. *Br J Clin Pharmacol* 1991; **32:** 399–401.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Molsicor; Molsidaine; ***Austria:*** Molsidolat; Molsihexal; ***Belg.:*** Coruno; Corvatard†; Corvaton; ***Cz.:*** Corvaton; Molsihexal; Molsiket; ***Fr.:*** Corvasal; ***Ger.:*** Corvaton; duracoron†; Molsi-Azu†; Molsi-Puren; Molsi†; Molsibeta; Molsihexal; molsiket; ***Hung.:*** Corvaton; ***Port.:*** Corvaton†; ***Rus.:*** Dilasidom (Диласидом); Sydnopharm (Сиднофарм); ***Spain:*** Corpea; Molsidain; ***Switz.:*** Corsifar†; Corvaton.

Monteplase *(rINN)*

E-6010; Monteplasa; Montéplase; Monteplasum.

Монтеплаза

$C_{2569}H_{3896}N_{746}O_{783}S_{39}$ = 59009.5.
CAS — 156616-23-8.

Profile

Monteplase is a thrombolytic related to alteplase (p.1207) that is used in acute myocardial infarction (p.1175) and venous thromboembolism (p.1189). For acute myocardial infarction, the usual dose is 27 500 units/kg given by intravenous injection as soon as possible after the onset of symptoms. For pulmonary embolism, the usual dose is 13 750 units/kg to 27 500 units/kg.

◊ References.

1. Kawai C, *et al.* A prospective, randomized, double-blind multicenter trial of a single bolus injection of the novel modified t-PA E6010 in the treatment of acute myocardial infarction: comparison with native t-PA. *J Am Coll Cardiol* 1997; **29:** 1447–53.
2. Inoue T, *et al.* A new thrombolytic agent, monteplase, is independent of the plasminogen activator inhibitor in patients with acute myocardial infarction: initial results of the COmbining Monteplase with Angioplasty (COMA) trial. *Am Heart J* 2002; **144:** E5.
3. Inoue T, *et al.* Long-term benefits of monteplase before coronary angioplasty in acute myocardial infarction. *Am J Cardiol* 2005; **95:** 506–8.
4. Inoue T, *et al.* Therapeutic potential of monteplase in acute myocardial infarction. *Am J Cardiovasc Drugs* 2005; **5:** 225–31.

Preparations

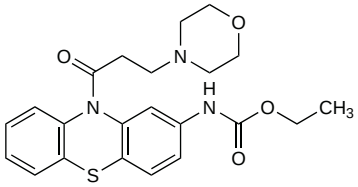
Proprietary Preparations (details are given in Part 3)
Jpn: Cleactor.

Moracizine *(BAN, rINN)*

EN-313; Moracizina; Moracizinum; Moricizine *(USAN)*. Ethyl [10-(3-morpholinopropionyl)phenothiazin-2-yl]carbamate.

Морацизин

$C_{22}H_{25}N_3O_4S$ = 427.5.
CAS — 31883-05-3.
ATC — C01BG01.
ATC Vet — QC01BG01.



Moracizine Hydrochloride *(BANM, rINNM)*

Hidrocloruro de moracizina; Moracizine, Chlorhydrate de; Moracizinhydroklorid; Moracizini Hydrochloridum; Morasitsiinihydrokloridi.

Морацизина Гидрохлорид

$C_{22}H_{25}N_3O_4S$,HCl = 464.0.
CAS — 29560-58-5.
ATC — C01BG01.
ATC Vet — QC01BG01.

Pharmacopoeias. In *Chin.* and *US*.
USP 31 (Moricizine Hydrochloride). A white to off-white crystalline powder. Soluble in water and in alcohol. Store in airtight containers.

Adverse Effects

The most common adverse effects associated with moracizine affect the CNS and the gastrointestinal tract and include dizziness, headache, fatigue, nausea, and abdominal pain. Other adverse effects include dyspnoea, dry mouth, blurred vision, impotence, and urinary-tract disorders. There have been occasional reports of fever, thrombocytopenia, hepatic dysfunction, hypothermia, and skin rash.

Like other antiarrhythmics moracizine can provoke or worsen arrhythmias. This may range from an increase in the frequency of premature ventricular contractions to induction or worsening of ventricular tachycardia.

An increased mortality rate occurred when moracizine was tested in the control of asymptomatic ventricular arrhythmias in post-infarction patients (see Cardiac Arrhythmias under Uses and Administration, below).

Effects on body temperature. Fever with elevated creatine phosphokinase and hepatic transaminase concentrations was associated with moracizine in 2 patients.[1] The fever abated within 48 hours of stopping moracizine and recurred within 24 hours of rechallenge in both patients. Results suggested a similarity to the neuroleptic malignant syndrome that is associated with other phenothiazine derivatives.

1. Miura DS, *et al.* Ethmozine toxicity: fever of unknown origin. *J Clin Pharmacol* 1986; **26:** 153–5.

Precautions

As for Flecainide Acetate, p.1288.

Interactions

Use of moracizine with other antiarrhythmics or arrhythmogenic drugs may increase the incidence of cardiac arrhythmias. Moracizine undergoes metabolism in the liver and its activity may be influenced by other drugs affecting the enzymes responsible for its metabolism; it is an enzyme inducer and may also affect the activity of other hepatically-metabolised drugs.

Pharmacokinetics

Moracizine is readily and almost completely absorbed from the gastrointestinal tract. It undergoes significant first-pass hepatic metabolism so that the oral bioavailability is about 38%. Moracizine is extensively metabolised and some of the numerous metabolites may be active. It induces its own metabolism; the plasma elimination half-life is about 2 hours after multiple doses. Although plasma concentrations are reduced with multiple dosing, clinical response is not affected. It is about 95% bound to plasma proteins. Moracizine is distributed into breast milk. About 56% of a dose is excreted in the faeces and about 39% in the urine.

◊ References.

1. Benedek IH, *et al.* Enzyme induction by moricizine: time course and extent in healthy subjects. *J Clin Pharmacol* 1994; **34:** 167–75.

Uses and Administration

Moracizine is a phenothiazine compound that has class I antiarrhythmic activity (p.1153) but does not readily fall into the subclasses a, b, or c. It is used as the hydrochloride in the treatment of serious symptomatic ventricular arrhythmias. Moracizine hydrochloride is given orally in a usual dose of 600 to 900 mg daily in 2 or 3 divided doses. Treatment should be started in hospital, and doses should be adjusted at intervals of not less than 3 days. Doses should be reduced in patients with hepatic or renal impairment (see below).

◊ Reviews.

1. Clyne CA, *et al.* Moricizine. *N Engl J Med* 1992; **327:** 255–60.

Administration in hepatic or renal impairment. The initial dose of moracizine hydrochloride in hepatic or renal impairment should be 600 mg or less daily and patients should be monitored closely (including ECG) before any adjustment of dose is made.

Cardiac arrhythmias. Moracizine is effective in various arrhythmias but is usually reserved for life-threatening ventricular arrhythmias; like other class I antiarrhythmics (see Cardiac Arrhythmias under Flecainide, p.1289), it has been associated with increased mortality when used prophylactically after myocardial infarction,[1] and is not recommended in such patients. However, there is limited evidence that it may be useful in some patients with supraventricular arrhythmias.[2,3]

1. The Cardiac Arrhythmia Suppression Trial II Investigators. Effect of the antiarrhythmic agent moricizine on survival after myocardial infarction. *N Engl J Med* 1992; **327:** 227–33.
2. Mehta AV, *et al.* Experience with moricizine HCl in children with supraventricular tachycardia. *Int J Cardiol* 1996; **57:** 31–5.
3. Geller JC, *et al.* Efficacy and safety of moricizine in the maintenance of sinus rhythm in patients with recurrent atrial fibrillation. *Am J Cardiol* 2001; **87:** 172–7.

Preparations

USP 31: Moricizine Hydrochloride Tablets.

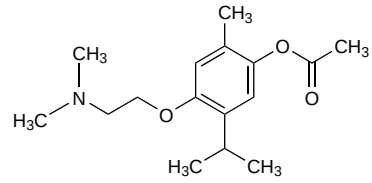
Proprietary Preparations (details are given in Part 3)
USA: Ethmozine†.

Moxisylyte Hydrochloride *(BANM, rINNM)*

Hidrocloruro de moxisilita; Moksisylyyttihydrokloridi; Moxisilita Clorhidrato; Moxisylyte, Chlorhydrate de; Moxisylythydroklorid; Moxisylyti Hydrochloridum; Moxisylytum Hydrochloridum; Thymoxamine Hydrochloride. 4-(2-Dimethylaminoethoxy)-5-isopropyl-2-methylphenyl acetate hydrochloride.

Моксизилита Гидрохлорид

$C_{16}H_{25}NO_3$,HCl = 315.8.
CAS — 54-32-0 (moxisylyte); 964-52-3 (moxisylyte hydrochloride).
ATC — C04AX10; G04BE06.
ATC Vet — QC04AX10; QG04BE06.



(moxisylyte)

NOTE. MOX, formerly THY, is a code approved by the BP 2008 for use on single unit doses of eye drops containing moxisylyte hydrochloride where the individual container may be too small to bear all the appropriate labelling information.

Pharmacopoeias. In *Br.*
BP 2008 (Moxisylyte Hydrochloride). A white, odourless or almost odourless, crystalline powder. Freely soluble in water and in chloroform; soluble in alcohol; practically insoluble in ether and in petroleum spirit. A 5% solution in water has a pH of 4.5 to 5.5. Protect from light.

Adverse Effects

Moxisylyte hydrochloride may cause nausea, diarrhoea, headache, vertigo, flushing of the skin, dry mouth, and nasal congestion. Hepatotoxicity has been reported. Overdosage may cause hypotension.

Transient ptosis has occurred occasionally after ophthalmic application. Prolonged erections or priapism have occurred rarely after intracavernosal injection and systemic effects may also occur.

Effects on the liver. Hepatic adverse reactions with moxisylyte first appeared in France after its use in benign prostatic hyperplasia, a condition in which relatively high doses were used (up to 480 mg daily compared with up to 320 mg daily for peripheral vascular disease). Since then the UK CSM has received reports associated with lower doses.[1] Thirteen hepatic reactions, accounting for 17% of all reports of suspected adverse reactions to moxisylyte, had been received. These comprised 3 cases of hepatic function abnormalities, 3 of jaundice, 4 of cholestatic jaundice, 2 of hepatitis, and 1 of hepatitis with jaundice. In most cases the reaction occurred within 5 weeks of the start of treatment and resolved on drug withdrawal. In 9 cases the dosage of moxisylyte was known and varied from 80 to 320 mg daily with 7 patients receiving 160 mg or less daily.

1. Committee on Safety of Medicines/Medicines Control Agency. Hepatic reactions with thymoxamine (Opilon). *Current Problems* 1993; **19:** 11–12. Also available at: http://www.mhra.gov.uk/home/idcplg?IdcService=GET_FILE&dDocName=CON2024456&RevisionSelectionMethod=LatestReleased (accessed 10/04/08)

Precautions

Moxisylyte hydrochloride should not be given to patients with active liver disease and should be given with care to patients with diabetes mellitus as it may theoretically decrease insulin requirements. Monitoring of liver function is recommended, especially if therapy is prolonged or if high doses are being used. Intracavernosal injection of moxisylyte is contra-indicated in patients with conditions that predispose to priapism.

Interactions

Moxisylyte may enhance the effects of antihypertensives and the hypotensive effect of moxisylyte may be enhanced by tricyclic antidepressants.

Uses and Administration

Moxisylyte is an alpha-adrenoceptor blocker with vasodilating activity. It is used by mouth in the treatment of peripheral vascular disease (p.1178) and has been self-administered by intracavernosal injection in erectile dysfunction (p.2179).