

30 micrograms/kg may be given by injection every 6 hours for acute anxiety. Lorazepam has also been used for **panic attacks**. A suggested dose in the *BNF* is 3 to 5 mg daily. A single oral dose of 1 to 4 mg at bedtime may be given for **insomnia** associated with anxiety. However, the MHRA in the UK advises against the use of oral daily doses of lorazepam above 4 mg for anxiety and phobia, and 2 mg for insomnia.

For **premedication** an oral dose of 2 to 3 mg may be given the night before the operation; the *BNF* suggests that this may be followed if necessary the next morning by a smaller dose. Alternatively, 2 to 4 mg may be given 1 to 2 hours before an operation. In the UK, although lorazepam tablets are not licensed for premedication of *children* under 5 years of age, the *BNFC* suggests that 50 to 100 micrograms/kg (maximum of 4 mg) may be given orally at least 1 hour before an operation to those aged 1 month to 12 years; the same dose may also be given the night before, in addition to, or to replace the dose before, the operation. Lorazepam may also be given parenterally for premedication; a dose of 50 micrograms/kg may be given 30 to 45 minutes before the operation if given intravenously or 1 to 1½ hours before if given intramuscularly. Again, although unlicensed in the UK for premedication of *children* under 12 years of age, the *BNFC* suggests that 50 to 100 micrograms/kg (maximum of 4 mg) may be given by slow intravenous injection to those aged 1 month to 18 years.

In the management of **status epilepticus** 4 mg may be given as a single intravenous dose; the *BNF* suggests that this may be repeated once after 10 minutes if seizures recur. A dose of 2 mg has been suggested for *children* by one manufacturer (*Wyeth*). Alternatively, the *BNFC* suggests that neonates and children up to 12 years of age may be given 100 micrograms/kg (maximum of 4 mg) as a single dose sublingually, rectally, or by slow intravenous injection; this may be repeated once after 10 minutes if necessary.

In patients receiving modestly emetogenic chemotherapy, lorazepam 1 to 2 mg orally may be added to antiemetic therapy with domperidone or metoclopramide, for the prophylaxis of **nausea and vomiting**. The addition of lorazepam may be helpful in the prevention of anticipatory symptoms because of its sedative and amnesic effects.

**Disturbed behaviour.** For a discussion of the management of behaviour disturbances associated with various psychotic disorders and the value of benzodiazepines, see p.954.

#### References.

1. Bieniek SA, *et al.* A double-blind study of lorazepam versus the combination of haloperidol and lorazepam in managing agitation. *Pharmacotherapy* 1998; **18**: 57–62.

#### Nausea and vomiting. References.

1. Malik IA, *et al.* Clinical efficacy of lorazepam in prophylaxis of anticipatory, acute, and delayed nausea and vomiting induced by high doses of cisplatin: a prospective randomized trial. *Am J Clin Oncol* 1995; **18**: 170–5.

**Premedication and sedation.** Lorazepam is used as a premedicant (p.1780) and as a sedative for therapeutic and investigative procedures such as dental treatment (p.956) and endoscopy (p.956), and also in intensive care (p.957).

#### References.

1. Maltais F, *et al.* A randomized, double-blind, placebo-controlled study of lorazepam as premedication for bronchoscopy. *Chest* 1996; **109**: 1195–8.

**Substance dependence.** Lorazepam has been used in the management of symptoms of alcohol withdrawal (p.1626).

#### References.

1. D'Onofrio G, *et al.* Lorazepam for the prevention of recurrent seizures related to alcohol. *N Engl J Med* 1999; **340**: 915–9.

### Preparations

**BP 2008:** Lorazepam Injection; Lorazepam Tablets;

**USP 31:** Lorazepam Injection; Lorazepam Oral Concentrate; Lorazepam Tablets.

#### Proprietary Preparations (details are given in Part 3)

**Arg.:** Aplacasse; Calmatron; Emotival; Kalmalin; Lorezan; Microzepam; Nervistop; Sedativat; Sidenar; Trapax; Tratenamin†; **Austral.:** Ativan; **Austria:** Merlit; Temesta; **Belg.:** Docloraz; Lauracalm; Lorazemed; Lorazetop; Loridem; Optisedine; Serenase; Temesta; Vigiten†; **Braz.:** Calmogenol†; Lorapam; Lorax; Lorazefast; Lorazepan†; Max-Pax; Mesmerin; **Canad.:** Ativan; Novo-Lorazem; Nu-Loraz; **Chile:** Abinol; Amparax; **Cz.:** Loram†; Tavor†; **Denm.:** Lorabenz; Temesta; **Fin.:** Temesta; **Fr.:** Equitam†; Temesta; **Ger.:** duralozam†; Laubeel; Somagerol; Tavor; Tolid; **Gr.:** Aripax; Ativan; Cictetan†; Dorm; Modium; Nifalin; Novhepar; Proneurit†; Tavor; Titus; Trankilium; **Hong Kong:** Ativan†; LAtiven; Lorans; Lorivan; Silence; **India:**

Ativan; Calmese; Larpose; **Indon.:** Ativan; Merlopam; Renaquil; **Irl.:** Ativan; **Israel:** Lorivan; **Ital.:** Control; Loralin; Lorans; Tavor; Zeloram; **Malaysia:** Ativan; Lorans; **Mex.:** Ativan; Sinestron†; **Neth.:** Temesta; **NZ:** Ativan; Lorapam†; **Pol.:** Lorafen; **Port.:** Ansilor; Lorenin; Loredal; Rialam; **Rus.:** Lorafen (Lopafer); **S.Afr.:** Ativan; Tranqipam; **Singapore:** Ativan; Lorans; **Spain:** Donix; Idalpremi; Orifdal; Placinal; Sedicepan; **Swed.:** Temesta; **Switz.:** Lorasifar; Sedazin; Temesta; **Thail.:** Anta; Anxira; Ativan†; Lonza; Lora; Loramed; Lorapam; Lorazene†; Lorazep; Ora; Razepam†; Tranavan†; **Turk.:** Ativan; **UK:** Ativan; **USA:** Ativan; **Venez.:** Ativan.

**Multi-ingredient:** **Austria:** Somnium†; **Switz.:** Somnium.

### Lormetazepam (BAN, USAN, rINN)

Lormetazepami; Lormétazépam; Lormetazepamum; Wy-4082. (R)-7-Chloro-5-(2-chlorophenyl)-1,3-dihydro-3-hydroxy-1-methyl-1,4-benzodiazepin-2-one.

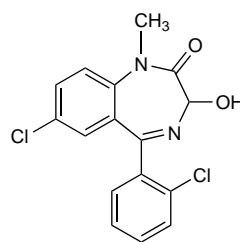
Лорметазепам

$C_{16}H_{12}Cl_2N_2O_2 = 335.2$ .

CAS — 848-75-9.

ATC — N05CD06.

ATC Vet — QN05CD06.



#### Pharmacopoeias. In Br.

**BP 2008** (Lormetazepam). A white crystalline powder. Practically insoluble in water; soluble in alcohol and in methyl alcohol. Protect from light.

#### Dependence and Withdrawal

As for Diazepam, p.987.

◇ For the purpose of withdrawal regimens, 0.5 to 1 mg of lormetazepam is considered equivalent to about 5 mg of diazepam.

#### Adverse Effects, Treatment, and Precautions

As for Diazepam, p.987.

#### Interactions

As for Diazepam, p.989.

#### Pharmacokinetics

Lormetazepam is rapidly absorbed from the gastrointestinal tract and metabolised to the inactive glucuronide. The terminal half-life is reported to be about 11 hours.

◇ A brief review of the pharmacokinetics of lormetazepam.<sup>1</sup>

1. Greenblatt DJ, *et al.* Clinical pharmacokinetics of the newer benzodiazepines. *Clin Pharmacokinet* 1983; **8**: 233–52.

#### Uses and Administration

Lormetazepam is a short-acting benzodiazepine with general properties similar to those of diazepam (p.992). It is mainly used as a hypnotic in the short-term management of insomnia (p.957) in usual oral doses of 0.5 to 1.5 mg at night. A dose of 500 micrograms is recommended for elderly or debilitated patients. Lormetazepam is also used in some countries for premedication (p.1780).

#### Preparations

**BP 2008:** Lormetazepam Tablets.

#### Proprietary Preparations (details are given in Part 3)

**Arg.:** Dilamet†; **Austria:** Noctamid; **Belg.:** Docloraz; Keladormet; Loramet; Loranka; Lormetamed; Metatop; Noctacalm; Noctamid; Octonox; Sedabin; Stilaze; **Chile:** Nocton; **Denm.:** Pronactan; **Fr.:** Noctamide; **Ger.:** Ergocalm; Loretam; Noctamid; **Gr.:** Loramet; **Hong Kong:** Loramet†; **Irl.:** Noctamid; **Ital.:** Axilium; Ipnolor; Luzil; Mexylor; Minias; **Neth.:** Loramet†; Noctamid; **NZ:** Noctoid; **Pol.:** Noctofer; **Port.:** Noctamid†; **S.Afr.:** Loramet; Noctamid; **Singapore:** Loramet; **Spain:** Aldosomnil; Loramet; Noctamid; **Switz.:** Loramet; Noctamid; **Thail.:** Loramet†.

### Loxapine (BAN, USAN, rINN)

CL-62362; Loksapini; Loxapin; Loxapina; Loxapinum; Oxilapine; SUM-3170. 2-Chloro-1-[(4-methylpiperazin-1-yl)dibenz[b,f]-[1,4]oxazepine.

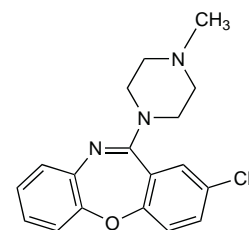
Локсапин

$C_{18}H_{18}ClN_3O = 327.8$ .

CAS — 1977-10-2.

ATC — N05AH01.

ATC Vet — QN05AH01.



### Loxapine Hydrochloride (BANM, rINNM)

Hydrocloruro de loxapina; Loxapine, Chlorhydrate de; Loxapini Hydrochloridum.

Локсапина Гидрохлорид

$C_{18}H_{18}ClN_3O \cdot HCl = 364.3$ .

ATC — N05AH01.

ATC Vet — QN05AH01.

### Loxapine Succinate (BANM, USAN, rINNM)

CL-71563; Loxapine, Succinate de; Loxapini Succinas; Succinato de loxapina.

Локсапина Сукцинат

$C_{18}H_{18}ClN_3O \cdot C_4H_4O_4 = 445.9$ .

CAS — 27833-64-3.

ATC — N05AH01.

ATC Vet — QN05AH01.

#### Pharmacopoeias. In US.

**USP 31** (Loxapine Succinate). A white to yellowish, odourless, crystalline powder. Store in airtight containers.

#### Adverse Effects, Treatment, and Precautions

As for Chlorpromazine, p.969.

Other adverse effects reported include nausea and vomiting, seborrhoea, dyspnoea, ptosis, headache, paraesthesia, facial flush, weight gain or loss, and polydipsia.

**Abuse.** There has been a report of 3 cases of loxapine succinate abuse.<sup>1</sup>

1. Sperry L, *et al.* Loxapine abuse. *N Engl J Med* 1984; **310**: 598.

**Effects on carbohydrate metabolism.** Reversible nonketotic hyperglycaemia, coma, and delirium developed in a patient receiving loxapine 150 mg daily in addition to lithium therapy.<sup>1</sup> Symptoms improved on stopping loxapine, but subsequently recurred when the patient was given amoxapine. The causative agent may have been 7-hydroxyamoxapine, a common metabolite of both amoxapine and loxapine.

1. Tollefson G, Lesar T. Nonketotic hyperglycemia associated with loxapine and amoxapine: case report. *J Clin Psychiatry* 1983; **44**: 347–8.

**Mania.** A patient, initially diagnosed as having schizophrenia, developed manic symptoms after receiving loxapine.<sup>1</sup> The diagnosis was revised to schizoaffective disorder but it was suspected that loxapine had a role in the emergence of the affective symptoms. As loxapine shares common metabolites with the antidepressant amoxapine it was suggested that an antidepressant effect might have precipitated the manic symptoms.

1. Gojer JAC. Possible manic side-effects of loxapine. *Can J Psychiatry* 1992; **37**: 669–70.

**Overdosage.** An 8-year-old child was treated with activated charcoal within 30 minutes of being given 375 mg of loxapine by accident.<sup>1</sup> The child became drowsy and was asleep but arousable 1 hour after ingestion. The degree of sedation appeared to peak after 3.75 hours and the child was discharged about 20 hours after ingestion.

1. Tarricone NW. Loxitane overdose. *Pediatrics* 1998; **101**: 496.

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

#### Interactions

As for Chlorpromazine, p.973.

#### Pharmacokinetics

Loxapine is readily absorbed from the gastrointestinal tract; peak plasma concentrations occur within 1 to 2 hours. It is very rapidly and extensively metabolised and there is evidence for a first-pass effect. It is mainly excreted in the urine, in the form of its conjugated metabolites, with smaller amounts appearing in the faeces as unconjugated metabolites; a substantial proportion of a dose is excreted in the first 24 hours. The major metabolites of loxapine are the active 7- and 8-hydroxyloxapine, which are conjugated to the glucuronide or sulfate; other metabolites include hydroxyloxapine-N-oxide, loxapine-N-oxide, and hydroxydesmethylloxapine (hydroxyamoxapine). Loxapine is widely distributed and is thought, on the basis of animal studies, to cross the placenta and be distributed into breast milk.

#### Uses and Administration

Loxapine is a dibenzoxazepine with general properties similar to those of the phenothiazine, chlorpromazine (p.975). It is given orally as the succinate and by intramuscular injection as the base

in the treatment of psychoses including schizophrenia. Doses are expressed in terms of the base; loxapine succinate 34 mg is equivalent to about 25 mg of loxapine.

The usual oral dose is 20 to 50 mg daily initially, in 2 divided doses, increased according to response over the next 7 to 10 days to 60 to 100 mg daily or more, in 2 to 4 divided doses; the maximum recommended dose is 250 mg daily. Maintenance doses are usually in the range of 20 to 60 mg daily, in divided doses. For the control of acute conditions it is given by intramuscular injection in daily doses of up to 300 mg in 2 or 3 divided doses. Reduced dosage may be required in elderly patients.

Loxapine has also been given orally and by intramuscular injection as the hydrochloride.

**Disturbed behaviour.** For a discussion of the use and limitations of antipsychotics such as loxapine in patients with disturbed behaviour, see p.954.

#### References

1. Carlyle W, *et al.* Aggression in the demented patient: a double-blind study of loxapine versus haloperidol. *Int J Clin Psychopharmacol* 1993; **8**: 103-8.

**Schizophrenia.** A brief review of loxapine<sup>1</sup> found no conclusive evidence that it was particularly effective in patients with paranoid schizophrenia (p.955). A subsequent systematic review considered that the limited evidence did not indicate a clear difference in its effects from other antipsychotics.<sup>2</sup>

1. Anonymous. Clozapine and loxapine for schizophrenia. *Drug Ther Bull* 1991; **29**: 41-2.
2. Chakrabarti A, *et al.* Loxapine for schizophrenia. Available in The Cochrane Database of Systematic Reviews; Issue 4. Chichester: John Wiley; 2007 (accessed 19/03/08).

#### Preparations

**USP 31:** Loxapine Capsules.

**Proprietary Preparations** (details are given in Part 3)

**Canad.:** Loxapac; **Fr.:** Loxapac; **Gr.:** Loxapac; **India:** Loxapac; **Spain:** Desconex; **UK:** Loxapac; **USA:** Loxitane.

#### Medazepam (BAN, rINN)

Medatsepaam; Médazépam; Medazepamum. 7-Chloro-2,3-dihydro-1-methyl-5-phenyl-1H-1,4-benzodiazepine.

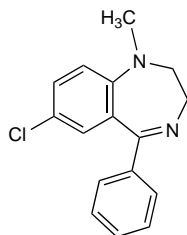
Medazepam

$C_{16}H_{15}ClN_2$  = 270.8.

CAS — 2898-12-6.

ATC — N05BA03.

ATC Vet — QN05BA03.



**Pharmacopoeias.** In *Jpn*.

#### Medazepam Hydrochloride (USAN)

Medazepam, hidrocloruro de; Ro-5-4556.

$C_{16}H_{15}ClN_2 \cdot HCl$  = 307.2.

CAS — 2898-11-5.

ATC — N05BA03.

ATC Vet — QN05BA03.

#### Profile

Medazepam is a long-acting benzodiazepine with properties similar to those of diazepam (p.986). It has been given for the short-term treatment of anxiety disorders (p.952). A usual oral dose is 10 to 30 mg daily in divided doses; in severe conditions up to 60 mg daily has been given. Reduced doses should be given to elderly or debilitated patients.

#### Preparations

**Proprietary Preparations** (details are given in Part 3)

**Cz.:** Anslan; **Rusedai**; **Ger.:** Rudotel; **Rusedal**; **Hung.:** Nobrium; **Rudotel**; **Rusedal**; **Pol.:** Rudotel; **Rus.:** Rudotel (Рудотель).

**Multi-ingredient:** **Ital.:** Debrum; **Spain:** Nobritol; **Turk.:** Tanko-Buskas; Tranko-Buskas.

#### Medetomidine Hydrochloride (BANM, USAN, rINN)

Hidrocloruro de medetomidina; Medetomidinihydroklorid; Médétomidine, Chlorhydrate de; Medetomidinihydroklorid; Medetomidini Hydrochloridum; MPV-785. (±)-4-[1-(2,3-Xylyl)ethyl]imidazole monohydrochloride.

Медетомидина Гидрохлорид

$C_{13}H_{16}N_2 \cdot HCl$  = 236.7.

CAS — 86347-15-1 (medetomidine hydrochloride); 86347-14-0 (medetomidine).

#### Profile

Medetomidine is an  $\alpha_2$ -adrenoceptor agonist with sedative, muscle relaxant, and analgesic properties. It is used as the hydrochloride in veterinary medicine.

Its isomer dexmedetomidine (p.986) is used as the hydrochloride in intensive care.

#### Melperone Hydrochloride (BANM, rINN)

FG-5111; Flubuperone Hydrochloride; Hidrocloruro de melperona; Melperon Hidroklorür; Melpérone, Chlorhydrate de; Melperoni Hydrochloridum; Methylperone Hydrochloride. 4'-Fluoro-4-(4-methylpiperidino)butyrophenone hydrochloride.

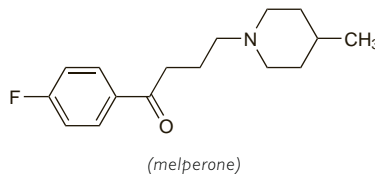
Мелперона Гидрохлорид

$C_{16}H_{22}FNO \cdot HCl$  = 299.8.

CAS — 3575-80-2 (melperone); 1622-79-3 (melperone hydrochloride).

ATC — N05AD03.

ATC Vet — QN05AD03.



#### Profile

Melperone is a butyrophenone with general properties similar to those of haloperidol (p.1000). It is given as the hydrochloride by mouth or by intramuscular injection for the management of psychoses such as schizophrenia (p.955) and in disturbed behaviour (p.954); doses are expressed as the hydrochloride. A usual oral dose is up to 400 mg daily in divided doses. In acute conditions it may be given intramuscularly in doses of 25 to 100 mg repeated to a usual maximum of 200 mg daily.

**Cardiac arrhythmias.** Melperone has been reported to have class III electrophysiologic and antiarrhythmic activity<sup>1,2</sup> but its clinical use as an antiarrhythmic would be limited by a high incidence of adverse effects.<sup>2</sup> For a discussion of the cardiovascular effects of antipsychotics in general, see under Chlorpromazine, p.970.

1. Møgelvang JC, *et al.* Antiarrhythmic properties of a neuroleptic butyrophenone, melperone, in acute myocardial infarction. *Acta Med Scand* 1980; **208**: 61-4.

2. Hui WKK, *et al.* Melperone: electrophysiologic and antiarrhythmic activity in humans. *J Cardiovasc Pharmacol* 1990; **15**: 144-9.

#### Pharmacokinetics. References.

1. Köppel C, *et al.* Gas chromatographic-mass spectrometric study of urinary metabolism of melperone. *J Chromatogr Biomed Appl* 1988; **427**: 144-50.

**Schizophrenia.** References<sup>1-3</sup> to the use of melperone in schizophrenia. It has been suggested that melperone should be considered as an atypical antipsychotic in view of the low incidence of extrapyramidal effects associated with its use.

1. Meltzer HY, *et al.* Melperone in the treatment of neuroleptic-resistant schizophrenia. *Psychiatry Res* 2001; **105**: 201-9.
2. Sumiyoshi T, *et al.* The effect of melperone, an atypical antipsychotic drug, on cognitive function in schizophrenia. *Schizophr Res* 2003; **59**: 7-16.
3. Sumiyoshi T, *et al.* A comparison of two doses of melperone, an atypical antipsychotic drug, in the treatment of schizophrenia. *Schizophr Res* 2003; **62**: 65-72.

#### Preparations

**Proprietary Preparations** (details are given in Part 3)

**Austria:** Buronil; **Neuril**; **Belg.:** Buronil; **Cz.:** Buronil; **Denm.:** Buronil; **Fin.:** Buronil; **Melpac:** **Ger.:** Eunerpan; **Harmosin**; **Mel-Puren**; **Melneurin**; **Melperomerck**; **Port.:** Bunil; **Swed.:** Buronil; **Turk.:** Buronon.

#### Meprobamate (BAN, rINN)

Meprobamaatti; Meprobamát; Meprobamat; Meprobamatas; Méprobamate; Meprobamato; Meprobamatum; Meprostanum. 2-Methyl-2-propyltrimethylene dicarbamate.

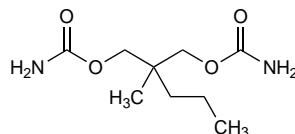
Мепробамат

$C_9H_{18}N_2O_4$  = 218.3.

CAS — 57-53-4.

ATC — N05BC01.

ATC Vet — QN05BC01.



NOTE. The following terms have been used as 'street names' (see p.vi) or slang names for various forms of meprobamate: Miltown; Mother's little helper; Uncle Miltie.

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

**Ph. Eur. 6.2** (Meprobamate). A white or almost white, crystalline or amorphous powder. Slightly soluble in water; freely soluble in alcohol.

**USP 31** (Meprobamate). A white powder having a characteristic odour. Slightly soluble in water; freely soluble in alcohol and in acetone; practically insoluble or insoluble in ether. Store in airtight containers.

#### Dependence and Withdrawal

As for the barbiturates (see Amobarbital, p.962).

#### Adverse Effects and Treatment

Drowsiness is the most frequent adverse effect of meprobamate. Other effects include nausea, vomiting, diarrhoea, paraesthesia, weakness, and CNS effects such as headache, paradoxical excitement, dizziness, ataxia, and disturbances of vision. There may be hypotension, tachycardia, and cardiac arrhythmias. Hypersensitivity reactions occur occasionally. These may be limited to skin rashes, urticaria, and purpura or may be more severe with angioedema, bronchospasm, or anuria. Erythema multiforme or Stevens-Johnson syndrome, and exfoliative or bullous dermatitis have been reported.

Blood disorders including agranulocytosis, eosinophilia, leucopenia, thrombocytopenia, and aplastic anaemia have occasionally been reported.

Overdose with meprobamate produces symptoms similar to those of barbiturate overdose (see Amobarbital, p.962), and is managed similarly.

**Overdose.** Two children aged 2 and 2.5 years recovered with conservative management alone after overdose of meprobamate with bendroflumethiazide despite measured plasma-meprobamate concentrations of 170 and 158 micrograms/mL, respectively.<sup>1</sup> Although it had been recommended that haemoperfusion should be considered at plasma-meprobamate concentrations above 100 micrograms/mL, the authors considered that experience with adults suggested haemoperfusion should normally only be considered at plasma concentrations above 200 micrograms/mL.

1. Dennison J, *et al.* Meprobamate overdose. *Hum Toxicol* 1985; **4**: 215-17.

#### Precautions

Meprobamate should be used with caution in patients with hepatic or renal impairment, depression, muscle weakness, and, as with all sedatives, in patients with impaired respiratory function. Meprobamate should be given with care to elderly or debilitated patients. Meprobamate may induce seizures in patients with a history of epilepsy.

Meprobamate may cause drowsiness; affected patients should not drive or operate machinery.

**Breast feeding.** The *BNF* considers that the use of meprobamate should be avoided in breast feeding mothers as concentrations in milk may exceed maternal plasma concentrations fourfold and may cause drowsiness in the infant.

**Porphyria.** Meprobamate has been associated with acute attacks of porphyria and is considered unsafe in porphyric patients.

**Pregnancy.** Studies on the use of meprobamate during pregnancy.

1. Milkovich L, van den Berg BJ. Effects of prenatal meprobamate and chlorthalidoxepoxide hydrochloride on human embryonic and fetal development. *N Engl J Med* 1974; **291**: 1268-71.
2. Crombie DL, *et al.* Fetal effects of tranquilizers in pregnancy. *N Engl J Med* 1975; **293**: 198-9.
3. Hartz SC, *et al.* Antenatal exposure to meprobamate and chlorthalidoxepoxide in relation to malformations, mental development, and childhood mortality. *N Engl J Med* 1975; **292**: 726-8.

#### Interactions

The sedative effects of meprobamate are enhanced by CNS depressants including alcohol. Meprobamate is capable of inducing hepatic microsomal enzyme systems involved in drug metabolism: the metabolism of other drugs may be enhanced if given concurrently.

#### Pharmacokinetics

Meprobamate is readily absorbed from the gastrointestinal tract and peak plasma concentrations occur 1 to 3 hours after ingestion. Meprobamate is widely distributed. It is extensively metabolised in the liver and is excreted in the urine mainly as an inactive hydroxylated metabolite and its glucuronide conjugate. About 10% of a dose is excreted unchanged. Meprobamate has a half-life reported to range from about 6 to 17 hours, although this may be prolonged after chronic use.

It diffuses across the placenta and appears in breast milk at concentrations of up to 4 times those in the maternal plasma.

#### Uses and Administration

Meprobamate is a carbamate with hypnotic, sedative, and some muscle relaxant properties, although in therapeutic doses its sedative effect rather than a direct action may be responsible for muscle relaxation. It has been used in the short-term treatment of anxiety disorders (p.952) and also for the short-term management of insomnia (p.957) but has largely been superseded by other drugs. Meprobamate has sometimes been used, alone or