Lidocaine

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Lidocaine


Drug Nomenclature (Latest modification: 30-Jan-2013)

**Synonyms:** Lidocain; Lidocaína; Lidocaïne; Lidocainum; Lidokaiini; Lidokain; Lidokaina; Lidokainas; Lignocaína; Lignocaine; リドカイン

**BAN:** Lidocaine

**INN:** Lidocaine [rINN (en)]

**INN:** Lidocaína [rINN (es)]

**INN:** Lidocaïne [rINN (fr)]

**INN:** Lidocainum [rINN (la)]

**INN:** Лидокаин [rINN (ru)]

**INN:** ليدوكاين [rINN (ar)]

**INN:** 利多卡因 [rINN (cn)]

**Chemical name:** 2-Diethylaminoaceto-2′,6′-xylidide

**Molecular formula:** C_{14}H_{22}N_{2}O =234.3

**CAS:** 137-58-6

**ATC code:** C01BB01; C05AD01; D04AB01; N01BB02; R02AD02; S01HA07; S02DA01

**ATC code (veterinary):** QC01BB01; QC05AD01; QD04AB01; QN01BB02; QR02AD02; QS01HA07; QS02DA01

**UNII code:** 98PI200987
Chemical Structure of Lidocaine

**Pharmacopoeias:**

In *Eur.* (see ), *Int.*, *Jpn*, and *US.*

**Ph. Eur. 7** (Lidocaine). A white or almost white, crystalline powder. M.p. 66 degrees to 70 degrees. Practically insoluble in water; very soluble in alcohol and in dichloromethane.

**USP 36** (Lidocaine). A white to slightly yellow crystalline powder with a characteristic odour. M.p. 66 degrees to 69 degrees. Practically insoluble in water; very soluble in alcohol and in chloroform; freely soluble in ether and in benzene; dissolves in oils.

**Physicochemical Characteristics** (Latest modification: 31-Mar-2004)

**Eutectic mixture**

Lidocaine forms a mixture with prilocaine that has a melting-point lower than that of either ingredient. This eutectic mixture is used in the preparation of topical dosage forms.

(last reviewed 2010-07-23; last modified 2004-03-31)

**Lidocaine Hydrochloride**


**Drug Nomenclature** (Latest modification: 12-Feb-2013)

**Synonyms:** Hidrocloruro de lignocaína; Lidocaína, hidrocloruro de; Lidocaíne, chlorhydrate de; Lidocainhydrochlorid; Lidocaini hydrochloridum;
Lidocaini Hydrochloridum Monohydricum; Lidokaiinihydrokloridi; Lidokain Hidroklorür; Lidokain-hidroklorid; Lidokain-hydrochlorid monohydrát; Lidokainhydroklorid; Lidokaino hidrochloridas; Lidokainy chlorowodorek; Lignoc. Hydrochlor.; Lignocaine Hydrochloride; Lignokain Hidroklorür

**BAN:** Lidocaine Hydrochloride [BANM]

**INN:** Lidocaine Hydrochloride [rINNM (en)]

**INN:** Hidrocloruro de lidocaína [rINNM (es)]

**INN:** Lidocaïne, Chlorhydrate de [rINNM (fr)]

**INN:** Lidocaini Hydrochloridum [rINNM (la)]

**INN:** Лидокаина Гидрохлорид [rINNM (ru)]

**Molecular formula:** \( C_{14}H_{22}N_2O.HCl.H_2O = 288.8 \)

**CAS:** 73-78-9 (anhydrous lidocaine hydrochloride); 6108-05-0 (lidocaine hydrochloride monohydrate)

**ATC code:** C01BB01; C05AD01; D04AB01; N01BB02; R02AD02; S01HA07; S02DA01

**ATC code (veterinary):** QC01BB01; QC05AD01; QD04AB01; QN01BB02; QR02AD02; QS01HA07; QS02DA01

**UNII code:** V13007Z41A (lidocaine hydrochloride monohydrate);
EC2CNF7XFP (anhydrous lidocaine hydrochloride)

**NOTE:**

LIDFLN is a code approved by the BP 2013 for use on single unit doses of eye drops containing lidocaine hydrochloride and fluorescein sodium where the individual container may be too small to bear all the appropriate labelling information.

**Pharmacopoeias:**

In *Chin.*, *Eur.* (see  ), *Int.*, *US*, and *Viet.*

*Ph. Eur. 7* (Lidocaine Hydrochloride). A white, or almost white, crystalline powder. M.p. 74 degrees to 79 degrees. Very soluble in water; freely soluble
in alcohol. A 0.5% solution in water has a pH of 4.0 to 5.5. Protect from light.

**USP 36** (Lidocaine Hydrochloride). A white, odourless, crystalline powder. M.p. 74 degrees to 79 degrees. Very soluble in water and in alcohol; soluble in chloroform; insoluble in ether.

**Physicochemical Characteristics** *(Latest modification: 31-Mar-2004)*

**Incompatibility**

Lidocaine hydrochloride has been reported to be incompatible in solution with amphotericin B,¹ sulfadiazine sodium,² methohexital sodium,² cefazolin sodium,¹ or phenytoin sodium.⁴

Acid stable drugs such as adrenaline hydrochloride, noradrenaline acid tartrate, or isoprenaline may begin to deteriorate within several hours of admixture with lidocaine hydrochloride as lidocaine solutions may raise the pH of the final solution above the maximum pH for their stability. Such extemporaneous mixtures should be used promptly after preparation.⁵

[last reviewed 2010-07-23; last modified 2004-04-17]


**pH of solutions**

For the effect pH has on the surface tension and administration of lidocaine solutions by infusion, see under Administration in Uses and Administration, ☞️. For its effect on the stability of local anaesthetic solutions and the pain associated with their injection, see ☞️.

(last reviewed 2010-07-23; last modified 2004-03-22)

**Stability**

Although there was no decrease in the lidocaine content of lidocaine hydrochloride and adrenaline injection during transport and storage under tropical conditions, the content of adrenaline fell to almost zero in some samples after several months; supply of the injection as a dry powder and separate solvent should be considered for the tropics.¹

The lidocaine content of buffered cardioplegic solutions has been reported² to decrease when stored in PVC containers at ambient temperature, but not when stored at 4 degrees. This loss appeared to result from pH-dependent sorption of lidocaine onto the plastic and did not occur when lidocaine solutions were stored in glass bottles.

(last reviewed 2010-07-23; last modified 2004-04-17)


**Adverse Effects and Treatment** (Latest modification: 30-Jul-2004)
As for Local Anaesthetics in general, and.

(last reviewed 2010-07-23; last modified 2004-07-30)

**Effects on the CNS** (Latest modification: 22-Aug-2008)

Suspected psychotic reactions have been reported in 6 patients given intravenous lidocaine for the treatment of cardiac disorders. In another case, 2 patients developed signs of cerebral ataxia after topical use of lidocaine for endoscopy.

When compared with other local anaesthetics, lidocaine may be associated with an increased risk of neurotoxic complications when used for spinal anaesthesia, (see under Adverse Effects of Central Block).

(last reviewed 2010-07-23; last modified 2008-08-22)


**Effects on the skin** (Latest modification: 18-Aug-2010)

Erythema and pigmentation of the upper lip in a child after local dental infiltration of lidocaine was attributed to a type of fixed drug eruption. Erythema may also occur after topical use of some lidocaine formulations, such as transdermal patches, while transient blanching of the skin is frequent after application of eutectic lidocaine/prilocaine mixtures to the skin. Erythema nodosum and erythema multiforme occurring simultaneously after the use of lidocaine spray and further exacerbated by local lidocaine injection has been reported.
True hypersensitivity reactions, including dermatitis, are rare (see also Hypersensitivity, ) but can occur.4

(last reviewed 2010-07-23; last modified 2010-08-18)


**Overdosage** (Latest modification: 15-Jun-2010)

The most serious effects of lidocaine intoxication are on the CNS and cardiovascular system and overdosage can result in severe hypotension, asystole, bradycardia, apnoea, seizures, coma, cardiac arrest, respiratory arrest, and death. Intoxication with lidocaine is relatively common and can occur as a result of acute overdosage after poor control of intravenous maintenance infusions or accidental injection of concentrated solutions. However, it more commonly results from inadvertent intravascular dosage during regional anaesthesia, or from too rapid injection of antiarrhythmic doses, particularly in patients with circulatory insufficiency, or when clearance is reduced due to heart failure, liver disease, old age, or through interaction with other drugs.1 Seizures have also been reported after excessive doses given subcutaneously.2 Although the bioavailability of lidocaine is low it may be sufficient to result in significant toxicity when swallowed1 and there have been reports of CNS effects, seizures, and death in children4-7 and adults8-10 after the ingestion of topical solutions and after
the use of viscous preparations in the mouth. Death has also ensued after gargling with a 4% lidocaine solution.\textsuperscript{11} Lidocaine is absorbed from mucous membranes and serious toxicity has been reported after urethral\textsuperscript{12} or rectal\textsuperscript{13} instillation of lidocaine preparations.

(last reviewed 2010-07-23; last modified 2010-06-15)

**Pregnancy** (Latest modification: 27-Jun-2008)

Serious adverse effects of epidural anaesthesia are rare but lidocaine may have transient effects on the neonatal auditory system.\(^1\)

(last reviewed 2010-07-23; last modified 2008-06-27)


**Precautions** (Latest modification: 10-May-2004)

As for Local Anaesthetics in general, \[\text{link} 3\].

In general lidocaine should not be given to patients with hypovolaemia, heart block or other conduction disturbances, and should be used with caution in patients with congestive heart failure, bradycardia, or respiratory depression. Lidocaine is metabolised in the liver and must be given with caution to patients with hepatic impairment. The plasma half-life of lidocaine may be prolonged in conditions that reduce hepatic blood flow such as cardiac and circulatory failure. Metabolites of lidocaine may accumulate in patients with renal impairment.

The intramuscular injection of lidocaine may increase creatine phosphokinase concentrations that can interfere with the diagnosis of acute myocardial infarction.

(last reviewed 2010-07-23; last modified 2004-05-10)

**Breast feeding** (Latest modification: 07-Aug-2010)

No adverse effects have been seen in breast-fed infants whose mothers were receiving lidocaine, and the American Academy of Pediatrics\(^4\) considers that it is therefore usually compatible with breast feeding.
Cerebrovascular disorders (Latest modification: 12-Jul-2006)

Lidocaine 5 mg/kg by intravenous infusion over 30 minutes was associated with a 12% reduction in cerebral blood flow in healthy subjects although this returned to normal within 60 minutes. Cerebral blood flow in patients with diabetes was lower than in healthy subjects, but was unaffected by lidocaine infusion, indicating reduced cerebrovascular reactivity.

(last reviewed 2010-07-23; last modified 2006-07-12)


Porphyria (Latest modification: 16-Nov-2011)

The Drug Database for Acute Porphyria, compiled by the Norwegian Porphyria Centre (NAPOS) and the Porphyria Centre Sweden, classifies lidocaine as probably not porphyrinogenic when used in local anaesthetic procedures, for surface anaesthesia of the skin and mucous membranes, and as an antiarrhythmic; it may be used as a drug of first choice and no precautions are needed.¹

(last reviewed 2010-07-23; last modified 2011-11-16)

1. 1. The Drug Database for Acute Porphyria. Available at: [online] (accessed 07/10/11)
Renal impairment (Latest modification: 23-Jul-2010)

The pharmacokinetics of lidocaine and its metabolite monoethylglycinexylidide appear to be unaffected in patients with renal failure on chronic haemodialysis except that accumulation of the metabolite glycinexylidide may occur during infusions of 12 hours or more. A later pharmacokinetic study of lidocaine in healthy subjects, patients with moderate or severe renal impairment, and anephric patients undergoing haemodialysis found that the clearance of lidocaine was decreased by an average of 18 and 49% in those with moderate and severe impairment, respectively, but was unchanged in those undergoing haemodialysis; there was, however, considerable interindividual variation in the clearance of lidocaine in patients with renal impairment. The authors suggested starting lidocaine infusions at the lower end of the usual dose range with close monitoring for toxicity; no reduction in loading doses appeared necessary. Data to predict the amount of lidocaine and glycinexylidide removed during haemodialysis have been provided. Lidocaine does not appear to be removed during haemofiltration.

(last reviewed 2010-07-23; last modified 2010-07-23)

Smoking (Latest modification: 22-Mar-2004)

The effects of smoking on lidocaine therapy are unclear. Studies in a limited number of patients have found reduced systemic bioavailability suggestive of induction of drug-metabolising activity\(^1\) and an inconsistent effect on protein binding.\(^2\)

(last reviewed 2010-07-23; last modified 2004-03-22)


Interactions (Latest modification: 22-Aug-2008)

For interactions associated with local anaesthetics, see \[\text{\url{#}}\].

The clearance of lidocaine may be reduced by propranolol and cimetidine (see \[\text{\url{#}}\] and \[\text{\url{#}}\], respectively). The cardiac depressant effects of lidocaine are additive with those of beta blockers and of other antiarrhythmics. Additive cardiac effects may also occur when lidocaine is given with intravenous phenytoin; however, the long-term use of phenytoin and other enzyme-inducers may increase dosage requirements of lidocaine (see Antiepileptics, \[\text{\url{#}}\]). Hypokalaemia produced by acetazolamide, loop diuretics, and thiazides antagonises the effect of lidocaine.

(last reviewed 2010-07-23; last modified 2008-08-22)

Antiarrhythmics (Latest modification: 10-May-2004)
Lidocaine toxicity, arising from the use of an oral preparation containing lidocaine, has been reported\(^1\) in a patient who was receiving *mexiletine*. There are individual reports of seizures or heart failure and cardiac arrest in patients who received intravenous lidocaine with *ajmaline*,\(^2\) *amiodarone*,\(^3\)\(^,\)\(^4\) or *tocainide*.\(^5\) Delirium has been reported in a patient who received lidocaine with *procainamide*.\(^6\)

(last reviewed 2010-07-23; last modified 2004-05-10)


**Antiepileptics** (Latest modification: 10-Jun-2004)

Studies in healthy subjects and patients with epilepsy\(^1\)\(^,\)\(^2\) suggest that long-term use of drugs such as *phenytoin* or *barbiturates* may increase dosage requirements for lidocaine due to induction of drug-metabolising microsomal enzymes. Phenytoin can also increase plasma concentrations of \(\alpha_1\)-acid glycoprotein and thereby reduce the free fraction of lidocaine in plasma.\(^3\)

The cardiac depressant effects of lidocaine may be dangerously enhanced by intravenous phenytoin.\(^4\)

**Beta blockers** (Latest modification: 15-Jun-2010)

Significant increases in plasma-lidocaine concentrations have occurred with propranolol,¹ owing to a reduction in the clearance of lidocaine from plasma. A similar interaction has occurred with nadolol² and metoprolol,² although in another study³ metoprolol did not alter the pharmacokinetics of lidocaine. The hepatic metabolism of lidocaine may be reduced as a result of a fall in hepatic blood flow associated with reduced cardiac output or it may be caused by direct inhibition of hepatic microsomal enzymes.⁶ Significant impairment of lidocaine clearance would therefore be most likely to occur with those drugs that lack intrinsic sympathomimetic activity and have a greater effect on cardiac output or with the more lipid-soluble drugs that have greater effects on microsomal oxygenases. The reduction in clearance produced by propranolol seems to be mainly by direct inhibition of metabolism rather than by lowering of hepatic blood flow.⁴

Although some licensed product information suggest a reduction in the dosage of lidocaine injection when used with beta blockers, others consider that potentially toxic plasma concentrations occur when lidocaine is given in repeated high doses and such an interaction should be of no clinical
significance after short-term treatment with lidocaine at recommended doses.

(last reviewed 2010-07-23; last modified 2010-06-15)


**H₂-antagonists** (Latest modification: 15-Jun-2010)

The interaction between *cimetidine* and lidocaine has been considered but differences between the studies make interpretation of the overall clinical significance of the results difficult. Cimetidine appears to reduce the hepatic metabolism of lidocaine; it may also reduce its clearance by decreasing hepatic blood flow. Significant increases in plasma-lidocaine concentrations have been reported. Changes in protein binding are not generally important but patients with myocardial infarction who have increased levels of α₁-acid glycoprotein may be partially protected from increases in concentrations of free lidocaine. Since it is not possible to identify those patients at risk all patients receiving both drugs should be closely monitored for signs of
toxicity. Some licensed product information suggest a reduction in the dosage of lidocaine injection when used with cimetidine; however, others consider that potentially toxic plasma concentrations occur when lidocaine is given in repeated high doses and such an interaction should be of no clinical significance after short-term treatment with lidocaine at recommended doses.

The use of other H₂-antagonists may be preferable. In studies in healthy subjects ranitidine either had no effect on lidocaine kinetics⁶ or produced changes consistent with small reductions in hepatic blood flow.⁷

(last reviewed 2010-07-23; last modified 2010-06-15)


Local anaesthetics (Latest modification: 15-Jun-2010)
Although several drugs were shown to reduce the amount of lidocaine bound to α1-acid glycoprotein only the displacement produced by bupivacaine was considered to be of possible clinical significance.¹

There is concern about the use of lidocaine to treat cocaine-induced arrhythmias as lidocaine may enhance toxicity.²

(last reviewed 2010-07-23; last modified 2010-06-15)


**Neuromuscular blockers** (Latest modification: 17-Jan-2004)

The possible interaction between neuromuscular blockers and antiarrhythmics including lidocaine is discussed under Atracurium, ↵. 

(last reviewed 2010-07-23; last modified 2004-01-17)

**Oral contraceptives** (Latest modification: 17-Jan-2004)

For mention of the effect of oral contraceptives on the protein binding of lidocaine, see under Protein Binding in Pharmacokinetics, ↵. 

(last reviewed 2010-07-23; last modified 2004-01-17)

**Pharmacokinetics** (Latest modification: 15-Jun-2010)

Lidocaine is readily absorbed from the gastrointestinal tract, from mucous membranes, and through damaged skin. Absorption through intact skin is poor. It is rapidly absorbed from injection sites including muscle.
After an intravenous dose lidocaine is rapidly and widely distributed into highly perfused tissues followed by redistribution into skeletal muscle and adipose tissue. Lidocaine is bound to plasma proteins, including α₁-acid glycoprotein (AAG). The extent of binding is variable but is about 66%. Plasma protein binding of lidocaine depends in part on the concentrations of both lidocaine and AAG. Any alteration in the concentration of AAG can greatly affect plasma concentrations of lidocaine (see under Protein Binding).

Plasma concentrations decline rapidly after an intravenous dose with an initial half-life of less than 30 minutes; the elimination half-life is 1 to 2 hours but may be prolonged if infusions are given for longer than 24 hours or if hepatic blood flow is reduced.

Lidocaine is largely metabolised in the liver and any alteration in liver function or hepatic blood flow can have a significant effect on its pharmacokinetics and dosage requirements. First-pass metabolism is extensive and bioavailability is about 35% after oral doses. Metabolism in the liver is rapid and about 90% of a given dose is dealkylated to form monoethylglycinexylidide and glycinexylidide. Both of these metabolites may contribute to the therapeutic and toxic effects of lidocaine and since their half-lives are longer than that of lidocaine, accumulation, particularly of glycinexylidide, may occur during prolonged infusions. Further metabolism occurs and metabolites are excreted in the urine with less than 10% of unchanged lidocaine. Reduced clearance of lidocaine has been found in patients with heart failure, alcoholic liver disease, or chronic or viral hepatitis. Drugs that alter hepatic blood flow or induce drug-metabolising microsomal enzymes can also affect the clearance of lidocaine (see Interactions). Renal impairment may affect the clearance of lidocaine; accumulation of its active metabolites can also occur.
Lidocaine crosses the placenta and blood-brain barrier; it is distributed into breast milk.

See also under Local Anaesthetics, ▼.

(last reviewed 2010-07-23; last modified 2010-06-15)

References.

(last reviewed 2010-07-23; last modified 2004-03-22)


**Absorption** (Latest modification: 12-Jul-2006)

**Surface application**

Serum-lidocaine concentrations were usually so low as to be unmeasurable in patients who gargled and expectorated 15 mL (300 mg) of a 2% viscous solution before endoscopy\(^1\) and mean peak serum concentrations of lidocaine were below those associated with toxicity following endotracheal application of 100 mg of lidocaine by spray.\(^2\) The relative bioavailability of lidocaine has been found to be higher when applied to the upper respiratory tract than after administration to the lower respiratory tract.\(^3\) Acceptably low plasma-lidocaine concentrations were noted with the following regimen used before bronchoscopy: a 4% lidocaine solution gargled for 30 seconds, a 2% solution sprayed onto the oropharynx, a 2% jelly applied to the oropharynx and nasal passages, and a 1% solution injected through a bronchoscope.\(^4\)

However, a fatality has been reported following the use of lidocaine as a gargle (see Overdosage, ▼); the absorption of intranasal lidocaine can also be highly variable.\(^5\) For bronchoscopy, inhalation of lidocaine from a
nebuliser rather than a direct spray may result in lower peak serum concentrations.⁶

Absorption of lidocaine is generally poor through intact skin. However, there is some evidence that absorption may be greater after application to the skin of preterm infants.⁷

(last reviewed 2010-07-23; last modified 2006-07-12)


**Protein binding** (Latest modification: 22-Aug-2008)

Lidocaine is markedly bound to α₁-acid glycoprotein (AAG), a plasma protein which is increased after trauma, surgery, burns, myocardial infarction, in chronic inflammatory disorders such as Crohn's disease, and in cancer. Protein binding may therefore be greatly increased in these conditions and reduced in neonates, the nephrotic syndrome, and in liver disease when AAG concentrations are lower than normal. This can result in an eightfold
variation in the free fraction of lidocaine between these conditions.\textsuperscript{1} Measurement of free drug concentrations may be a better guide to dosage requirements than measurement of total plasma concentrations.\textsuperscript{2} AAG concentrations may also be reduced by oestrogens\textsuperscript{3} leading to a higher free fraction of lidocaine in women than in men and the free fraction is further increased during pregnancy and in women taking oral contraceptives.\textsuperscript{3,4} Protein binding may also be affected by other concomitant drug therapy or smoking (for further details, see Antiepileptics under Interactions, \textsuperscript{5,6} and Precautions, Smoking, \textsuperscript{7}).

(last reviewed 2010-07-23; last modified 2008-08-22)


**Uses and Administration** (Latest modification: 02-Jan-2011)

Lidocaine is a local anaesthetic of the amide type with actions and uses similar to those described on .\textsuperscript{8} It is used for infiltration anaesthesia and regional nerve blocks. It has a rapid onset of action and anaesthesia is obtained within a few minutes; it has an intermediate duration of action. The speed of onset and duration of action of lidocaine are increased by the addition of a vasoconstrictor and absorption into the circulation from the site of injection is reduced. It is generally given as the hydrochloride. Lidocaine hydrochloride monohydrate 1.23 g or anhydrous lidocaine hydrochloride
1.16 g are both equivalent to about 1 g of lidocaine. A carbonated solution of lidocaine is also available in some countries for injection (see \(\text{\(\text{\textsuperscript{\textregistered}}\)}\)). Lidocaine is also a useful surface anaesthetic but it may be rapidly and extensively absorbed following topical application to mucous membranes, and systemic effects may occur. Hyaluronidase (\(\text{\(\text{\textsuperscript{\textregistered}}\)}\)) has been added to preparations of lidocaine used for surface and infiltration anaesthesia but may enhance systemic absorption. (Local anaesthetic techniques are discussed on \(\text{\(\text{\textsuperscript{\textregistered}}\)}\).)

Lidocaine is included in some injections, such as depot corticosteroids, to prevent pain, itching, and other local irritation. Lidocaine sodium has also been included in intramuscular injections of some antibacterials to reduce the pain on injection.

Lidocaine is also a class Ib antiarrhythmic used in the treatment of ventricular arrhythmias, especially after myocardial infarction. It has been given by intravenous infusion in the treatment of refractory status epilepticus.

**USE IN LOCAL ANAESTHESIA.**

The dose of lidocaine hydrochloride used for local anaesthesia depends on the site of injection and the procedure used. Specific doses for individual procedures are not always available in UK licensed product information, although US product information often includes them (see below). When given with adrenaline, the suggested general **maximum single dose** of lidocaine hydrochloride is 500 mg; without adrenaline, the recommended maximum single dose in the UK is 200 mg and in the USA, 300 mg, except for spinal anaesthesia (see below). Lidocaine hydrochloride solutions containing adrenaline 1 in 200 000 are used for infiltration anaesthesia and nerve blocks including epidural block; higher concentrations of adrenaline are seldom necessary, except in dentistry, where solutions of lidocaine hydrochloride with adrenaline 1 in 80 000 are widely used. Doses should be reduced in children, the elderly, and in debilitated patients. A test dose,
preferably with adrenaline, should be given before starting epidural block to detect inadvertent intravascular or subarachnoid dosage.

The following doses have been recommended for individual local anaesthetic procedures in the USA:

For percutaneous infiltration anaesthesia, 5 to 300 mg (1 to 60 mL of a 0.5% solution, or 0.5 to 30 mL of a 1% solution).

The dosage in peripheral nerve block depends on the route. For brachial plexus block 225 to 300 mg (15 to 20 mL) as a 1.5% solution is used; for dental nerve block a 2% solution may be used in doses of 20 to 100 mg (1 to 5 mL); for intercostal nerve block 30 mg (3 mL) is given as a 1% solution; for paracervical block a 1% solution is used in a dose of 100 mg (10 mL) on each side, repeated not more frequently than every 90 minutes; for paravertebral block a 1% solution may be used in doses of 30 to 50 mg (3 to 5 mL); a 1% solution is recommended for pudendal block in doses of 100 mg (10 mL) on each side; for retrobulbar block a 4% solution may be used in doses of 120 to 200 mg (3 to 5 mL).

For sympathetic nerve block a 1% solution is recommended; doses are 50 mg (5 mL) for cervical block and 50 to 100 mg (5 to 10 mL) for lumbar block.

For epidural anaesthesia 2 to 3 mL of solution is needed for each dermatome to be anaesthetised but usual total doses and recommended concentrations are: lumbar epidural 250 to 300 mg (25 to 30 mL) as a 1% solution for analgesia and 225 to 300 mg (15 to 20 mL) as a 1.5% solution or 200 to 300 mg (10 to 15 mL) as a 2% solution for anaesthesia, and for thoracic epidural a 1% solution may be used at doses of 200 to 300 mg (20 to 30 mL). In obstetric caudal analgesia 200 to 300 mg (20 to 30 mL) is used as a 1% solution and in surgical caudal anaesthesia a 1.5% solution may be used in doses of 225 to 300 mg (15 to 20 mL). For
continuous epidural or caudal anaesthesia, the maximum doses should not be repeated more frequently than every 90 minutes.

A hyperbaric solution of 1.5% or 5% lidocaine hydrochloride in glucose 7.5% solution is available for spinal anaesthesia; adrenaline should not be used. Doses of up to 50 mg (1 mL) as a 5% solution and 9 to 15 mg (0.6 to 1 mL) as a 1.5% solution have been used during labour for a normal vaginal delivery. Up to 75 mg (1.5 mL) as the 5% solution has been used for caesarean section and 75 to 100 mg (1.5 to 2 mL) for other surgical procedures.

For intravenous regional anaesthesia a 0.5% solution without adrenaline has been used in doses of 50 to 300 mg (10 to 60 mL); a maximum dose of 4 mg/kg has been recommended for adults.

Lidocaine may be used in a variety of formulations for surface anaesthesia.

Lidocaine ointment is used for anaesthesia of skin and mucous membranes with a maximum recommended total dose of 20 g of 5% ointment (equivalent to 1 g of lidocaine base) in 24 hours.

A 4% foam may be applied to the skin up to 3 or 4 times daily for the relief of pain caused by minor cuts or burns, abrasions, sunburn, and insect bites.

Gels are used for anaesthesia of the urinary tract and the dose used varies in different countries. UK licensed product information recommends instilling about 120 to 220 mg (6 to 11 mL) of lidocaine hydrochloride as a 2% gel into the urethra several minutes before examination. The doses used in the USA are as follows: in females 60 to 100 mg of lidocaine hydrochloride as a 2% gel is inserted into the urethra several minutes
before examination; in males 100 to 200 mg is used before catheterisation and 600 mg before sounding or cystoscopy.

A 2% gel may also be used as *anaesthetic lubrication for endotracheal intubation*; a moderate amount is applied to the external surface of the endotracheal tube shortly before use.

A eutectic gel containing lidocaine base 2.5% and prilocaine base 2.5% is used for *anaesthesia of the periodontal pockets* during dental scaling and/or root planing. Typically, 1.7 g of gel, or less, will be sufficient for one quadrant of dentition; the maximum recommended quantity per treatment session is 8.5 g.

Topical solutions are used for *surface anaesthesia of mucous membranes of the mouth, throat, and upper gastrointestinal tract*. For painful conditions of the mouth and throat a 2% solution may be used: 300 mg (15 mL) may be rinsed and ejected or, for pharyngeal pain, the solution is gargled and swallowed if necessary; it should not be used more frequently than every 3 hours to a maximum daily dose of 2.4 g. Doses of 40 to 200 mg as a 4% solution (1 to 5 mL) are used before bronchoscopy, bronchography, laryngoscopy, oesophagoscopy, endotracheal intubation, and biopsy in the mouth and throat. Lidocaine in a strength of 10% has also been used as a spray for application to mucous membranes for the prevention of pain during various procedures including use in otorhinolaryngology, dentistry, introduction of instruments into the respiratory and gastrointestinal tracts, and in obstetrics. The dose depends on the extent of the site to be anaesthetised; 10 to 50 mg is generally sufficient for dentistry and otorhinolaryngology; for other procedures, the maximum dose in a 24-hour period is 200 mg. For laryngotracheal anaesthesia 160 mg of lidocaine hydrochloride as a 4% solution is sprayed or instilled as a single dose into the lumen of the larynx and trachea.
Lidocaine is used rectally as suppositories, sprays, ointments, and creams in the treatment of haemorrhoids and other painful perianal conditions.

*Eye drops* containing lidocaine hydrochloride 4% with fluorescein are used in tonometry.

An *ophthalmic gel* containing lidocaine hydrochloride 3.5% is used for surface anaesthesia during ophthalmological procedures.

A *eutectic mixture* containing lidocaine base 2.5% and prilocaine base 2.5% is applied as a cream under an occlusive dressing to produce *surface anaesthesia of the skin* before procedures requiring needle puncture, surgical treatment of localised lesions, and split skin grafting; it has been used similarly, but without an occlusive dressing, before removal of genital warts (see also under Surface Anaesthesia).

Other methods of dermal delivery include a *transdermal patch* of lidocaine 5% for the symptomatic relief of neuropathic pain associated with postherpetic neuralgia, and an *iontophoretic drug delivery system* incorporating lidocaine and adrenaline. A transdermal patch containing lidocaine 70 mg with tetracaine 70 mg is also available for surface anaesthesia.

**USE IN ARRHYTHMIAS.**

For the treatment of *ventricular arrhythmias* lidocaine is given *intravenously* as the hydrochloride. It may be used in advanced cardiac life support for cardiac arrest due to ventricular fibrillation and pulseless ventricular tachycardia when direct current shocks (together with adrenaline) have failed to restore a normal rhythm. For adults, a usual dose of 1 to 1.5 mg/kg can be given and repeated as necessary to a maximum total dose of 3 mg/kg. The *endotracheal* route has been used when intravenous access cannot be obtained, although doses should probably be
larger than those given intravenously; the precise endotracheal dose has not yet been established, however.

Lidocaine is also used in other ventricular arrhythmias in which the patient is in a more stable condition. In these circumstances lidocaine hydrochloride is usually given as a loading dose followed by an infusion. Usual doses are 50 to 100 mg or 1 to 1.5 mg/kg as a direct *intravenous injection* at a rate of 25 to 50 mg/minute. If no effect is seen within 5 to 10 minutes of this loading dose, it may be repeated once or twice to a maximum dose of 200 to 300 mg in 1 hour. A *continuous intravenous infusion* is usually started after loading, at a dose of 1 to 4 mg/minute. It is rarely necessary to continue this infusion for longer than 24 hours, but in the event that a longer infusion is required, the dose may need to be reduced to avoid potential toxicity resulting from an increase in the half-life. Dosage may need to be reduced in the elderly and in patients with heart failure or liver disorders.

In emergency situations, lidocaine hydrochloride has also been given for arrhythmias by *intramuscular* injection into the deltoid muscle in a dose of 300 mg, repeated if necessary after 60 to 90 minutes.

(last reviewed 2010-07-23; last modified 2011-01-02)

**Action** (Latest modification: 22-Mar-2004)

For a comparison of the vasoactivity of lidocaine and some other local anaesthetics, see ![link](https://example.com).

(last reviewed 2010-07-23; last modified 2004-03-22)

**Administration in children** (Latest modification: 23-Sep-2013)

The [BNFC](https://bnfc.org) recommends that the dose of lidocaine in children should be adjusted according to physical status and the nature of the procedure.
Burns (Latest modification: 15-Jun-2010)

Lidocaine given intravenously has been reported to have produced pain relief in a few patients with second-degree burns.\(^1\)

Cardiac arrhythmias (Latest modification: 16-Feb-2011)

Lidocaine is classified as a class Ib antiarrhythmic drug and may be used in the treatment of ventricular arrhythmias, including those associated with cardiac arrest and myocardial infarction, although other drugs are usually preferred (see Cardiac Arrhythmias). It is usually given intravenously (see ). Lidocaine may also be used during advanced cardiac life support (see Cardiac Arrest).

Lidocaine has been considered for the prophylaxis of ventricular fibrillation in patients with proven or suspected myocardial infarction. However, while some studies have identified a protective effect of lidocaine, in others it was not shown to reduce mortality and might even have increased it, and thus is no longer generally recommended.

It has been suggested that the increased mortality sometimes seen with lidocaine might be associated with the duration of treatment; a study found that patients who received a bolus dose of lidocaine followed by a 40-hour continuous infusion for prophylaxis of ventricular arrhythmias had more episodes of heart failure than patients who received the bolus dose followed by an 8-hour infusion.
1. Horwitz RI, Feinstein AR. Improved observational method for studying 


**Hiccup** (Latest modification: 15-Jun-2010)

For the management of intractable hiccups see under Chlorpromazine. Lidocaine is one of a large number of drugs that has been tried in the treatment of hiccups without strong evidence of their efficacy. It has been given intravenously, or in the form of a 2% viscous solution taken orally. Nebulised lidocaine has also been tried.¹

(last reviewed 2010-07-23; last modified 2010-06-15)


**Intubation** (Latest modification: 22-Mar-2004)
Lidocaine has produced conflicting results when used to attenuate the pressor response and rise in intra-ocular pressure induced by procedures such as tracheal intubation.\(^1\) For an overall discussion of this problem, see under Anaesthesia, \(^1\).

(last reviewed 2010-07-23; last modified 2004-03-22)


**Migraine and cluster headache** (Latest modification: 18-Jul-2006)

Despite periodic interest, lidocaine has so far failed to find an accepted role in the management of migraine (\(^1\)) or cluster headache (\(^1\)). Lidocaine has been tried for the emergency parenteral treatment of migraine, but in a comparative study with dihydroergotamine or chlorpromazine it was found to be less effective than either.\(^1\) While some workers have found that intranasal instillation of lidocaine has produced rapid relief of headache in some patients with acute migraine (though early relapse was common)\(^2\) others have found it to be ineffective.\(^3\) It has also been reported to be effective in aborting individual attacks of headache during cluster periods in patients
with cluster headache. However, most patients do not appear to obtain complete pain relief.

(last reviewed 2010-07-23; last modified 2006-07-18)


**Neuropathic pain syndromes** (Latest modification: 08-Sep-2008)

Lidocaine may be useful in the management of some types of neuropathic pain syndromes (🔗). The pain of *postherpetic neuralgia* has been significantly reduced by the application of lidocaine 5% transdermal patches although a systematic review found insufficient evidence to recommend its use as first-line therapy; intravenous lidocaine and a eutectic mixture of lidocaine and prilocaine (see Surface Anaesthesia) have also been of benefit. Other syndromes where intravenous lidocaine therapy has been tried include *diabetic neuropathy* and *central neuropathic pain* associated with stroke or spinal cord injury.

(last reviewed 2010-07-23; last modified 2008-09-08)


Pleurodesis (Latest modification: 10-May-2004)

Lidocaine has been instilled intrapleurally as a 1% solution in doses of up to 300 mg to relieve the severe chest pain associated with the use of tetracycline for pleurodesis. While the larger doses were significantly more effective toxic plasma concentrations were less likely to occur if a dose of 3 mg/kg or less was used.

(last reviewed 2010-07-23; last modified 2004-05-10)


Status epilepticus (Latest modification: 12-Jul-2006)
Lidocaine hydrochloride may be used to control status epilepticus resistant to more conventional treatment, particularly in those with respiratory disease. It has a rapid onset of action but its effect is short-lived and continuous infusion may be necessary.\(^1\) It should also be noted that doses producing high plasma concentrations of lidocaine can result in CNS toxicity including seizures.\(^1\) Recurrence of seizures associated with the withdrawal of prolonged lidocaine therapy may be due to its accumulated metabolites exerting an excitatory effect on the nervous system when the inhibitory effect of lidocaine is being reduced.\(^2\)

Lidocaine was used instead of diazepam for 42 episodes of status epilepticus in 36 patients who either had limited pulmonary reserve or who had not responded to intravenous diazepam.\(^3\) Lidocaine 1.5 to 2 mg/kg (usually a dose of 100 mg) was given as a single intravenous dose over 2 minutes. This dose was repeated once if there was no positive response to the first dose (11 episodes) or if the seizures recurred (19 episodes). Subsequently a continuous infusion of lidocaine at a rate of 3 to 4 mg/kg per hour was given in the 7 episodes that recurred after the second dose; 5 of these showed a positive response. The 11 episodes not responding to the first dose did not respond to the second dose or to a continuous infusion. In a retrospective analysis\(^4\) of 37 children with status epilepticus, lidocaine was effective in only 19 of 53 episodes; however, in a few cases it was effective where other drugs had failed, and those patients who responded did so rapidly (within 5 minutes of being given the drug).

(last reviewed 2010-07-23; last modified 2006-07-12)


**Surface anaesthesia** (Latest modification: 15-Jun-2010)

**Eutectic mixtures**

A cream containing lidocaine 2.5% and prilocaine 2.5% as a eutectic mixture can produce local anaesthesia when applied topically to intact skin. It appears to be of value in *adults* and *children*,¹⁻³ in minor medical or surgical procedures such as venepuncture, intravenous or arterial cannulation, retrobulbar injections, lumbar puncture, curettage of molluscum contagiosum lesions, genital wart removal, split skin grafting, laser treatment, extracorporeal shock wave therapy, separation of preputial adhesions, and circumcision. It has also been tried as an anaesthetic for the ear drum in preparation for otological procedures such as myringotomy and grommet insertion but is potentially ototoxic and should not be used in the presence of a perforation. Postherpetic neuralgia (ınt) has also been treated with some success.⁴⁻⁵

The eutectic cream is usually applied to skin under an occlusive dressing for at least 60 minutes although it has been suggested that for children aged 1 to 5 years 30 minutes may be sufficient.⁶ The manufacturers suggest a maximum application time of 5 hours. The onset and duration of the effect may be affected by the site of application.² When used for the removal of genital warts an occlusive dressing is not necessary and the application time recommended by the manufacturer is 5 to 10 minutes. The level of anaesthesia begins to decline after 10 to 15 minutes when applied to the genital mucosa and any procedure should be started immediately.

Eutectic mixtures of lidocaine and prilocaine have also been used in *neonates* to reduce the pain of puncture procedures⁷ and for circumcision,⁸ and appear to be safe and effective. However, there has been concern that
excessive absorption (particularly of prilocaine) might lead to methaemoglobinaemia (see ). Nonetheless, in some countries, including the UK and USA, the cream is licensed for use in neonates provided that their gestational age is at least 37 weeks, and that methaemoglobin values are monitored in those aged 3 months or less; it should not be used in infants under 1 year who are receiving methaemoglobin-inducing drugs.

Systemic absorption of both drugs from the eutectic cream appears to be minimal across intact skin even after prolonged or extensive use. However, it should not be used on wounds or mucous membranes except for genital warts in adults. It should not be applied to or near the eyes because it causes corneal irritation, and it should not be instilled in the middle ear. It should be used with caution in patients with atopic dermatitis, anaemia, or congenital or acquired methaemoglobinaemia. Transient paleness, redness, and oedema may occur following application.

Some studies suggest that a topical gel formulation of tetracaine 4% can produce longer and more rapid anaesthesia than the above lidocaine with prilocaine cream (see Surface Anaesthesia, under Uses and Administration of Tetracaine, ). It has also been suggested that topical tetracaine may have practical advantages over the eutectic mixture of lidocaine and prilocaine, which has to be applied for at least one hour, and causes vasoconstriction at the site of application which can make venepuncture difficult.

For reference to the use of a eutectic mixture of lidocaine and prilocaine for the management of premature ejaculation in adults, see .

(last reviewed 2010-07-23; last modified 2010-06-15)


**Tinnitus** (Latest modification: 13-Aug-2011)

Tinnitus is the perception of a noise that arises or appears to arise within the head.

Objective tinnitus may be audible to others and arises from lesions outside the auditory system. Subjective tinnitus (tinnitus aurium) originates from sites within the auditory system and is perceived only by the patient. A simple and remediable cause of tinnitus can be impacted ear wax. Tinnitus is often associated with head injury, vertigo, and hearing loss, including age-related and noise-induced hearing loss. It may also be a symptom of an underlying disorder such as Ménière's disease, may be associated with
anxiety or depressive disorders, or may be a manifestation of drug toxicity (for example with aspirin or quinine). In such cases, treatment of the underlying disorder or removal of the offending drug can resolve the tinnitus.

Treatment of tinnitus is difficult although reassurance and counselling are often effective in helping patients to tolerate their condition. Maskers or, if the tinnitus is associated with hearing loss, hearing aids are also used; surgery is rarely indicated. Intravenous lidocaine has proven to be effective in reducing or eliminating tinnitus but the effect only lasts for a few hours and is, therefore, impractical for most patients. Efforts to find an effective oral analogue of lidocaine have not, so far, been successful. Other drugs that have been tried include acamprosate, benzodiazepines such as alprazolam and clonazepam, the antiepileptics carbamazepine and phenytoin, tricyclic antidepressants, and the loop diuretic furosemide, but adverse effects limit their use. Ginkgo biloba has been tried but there are doubts about its value.

References.

(last reviewed 2010-07-23; last modified 2011-08-13)

For further information on the substances mentioned above, see:

- Acamprosate, [↩]
- Alprazolam, [↩]
- Carbamazepine, [↩]
- Clonazepam, [↩]
- Furosemide, [↩]
- Ginkgo Biloba, [↩]
- Lidocaine, [↩]
- Phenytoin, [↩]
- Tricyclic Antidepressants (see Amitriptyline, [↩])

**Preparations** (Latest modification: 15-Nov-2013)

**Single-ingredient Preparations** (Latest modification: 15-Nov-2013)

The symbol × denotes a preparation which is discontinued or no longer actively marketed.

**Argentina:** Fidecaina; Gobbicaina; Indican; Lafecaina; Larjancaina; Lidanest; LMX 4; Regiocaina; Solvente Indoloro; Xylocaina; **Australia:** Fargo×; Lignospan×; Nurocain with Sympathin×; Nurocain×; Ora-Sed Lotion×; Stud 100; Xylocaine Special Adhesive; Xylocaine; Xylocard; **Austria:** Lidocorit; Neo-Xylestesin forte×; Neo-Xylestesin; Neurolid×; Versatis; Xylanest; Xylocain; Xylocard×; Xyloneural; **Belgium:** Linisol; Otalgan; Otipax; Otocalmine; Otoralgyl×; Versatis; Xylocaine Visqueuse; Xylocaine; Xylocaine; Xylocard; **Brazil:** Dermomax; Gel-Lido×; Hypocainax; Labcaina; Lidial; Lidocabbott; Lidocalm×; Lidocord×; Lidoflex×; Lidogel; Lidogeyer×; Lidojet; Lidopass; Lidospray; Lidoston; Xylestesin; Xylocaina; **Canada:** After Sun; Afterburn; Banana Boat Soothacaine×; Band-Aid Antiseptic; Betacaine; Burn Cream; Burn Relief; Caribbean Breeze Burn
Relief; Family Medicated Sunburn Relief; Hawaiian Tropic After Sun; Lidodan; Lidomax; Maxilene; Octocaine; Pre-Wax; Preattached; Safetec Burn; Safetec Sting Relief; Smartshield After Sun; Solarcaine Lidocaine; Soothing Gel; Stallion; Water-Jel; Xylocaine; Xylocard; Zilactin-Lx; Chile: Bebegesic; Calmate de Denticion; Dentaliv; Dimecaina; Exido; Gelcain; Odongel; Prolong; Solin; Versatis; Xylocaina; China: Ke Ze Pu (克泽普); Li Shu Ka (利舒卡); Czech Republic: Trachisan; Versatis; Xylestesin-Ax; Xylestesin; Xylocaine; Denmark: Versatis; Xylocain; Xyloplyin; Finland: Lidocard; Xylocain; France: Biodicainex; Dynexan; Dynexangival; Lidriax; Mesocaine; Otoralqyl; Pressicaine Nx; Pressicaine; Versatis; Xylocaine; Xylocard; Xylocontact; Xylonor; Xolorolland; Ziacaine; Germany: Acoin; Anaestholx; Corafusinx; Gelcainx; Haemo-Exhirud Bufexamacx; Heweneural; Licain; Lidesthesinx; Lidocard; Lidocatonx; Lidojectx; LidoPosterinex; Neo-Lidocatonx; neo-Novutox; Nor-Aaestholx; Posterisan akut; Rowo-629x; Sagittaprocxt; Trachilid; Trachisan Halsschmerztablettenx; Versatis; Xylestesin-A, Xylestesin centrox; Xylestesin-mFx; Xylestesin-Sx; Xylestesin, Xylestesin-Fx; Xylocain (Kardiologie); Xylocain; Xylocitin cor; Xylocitin; Xyloneural; Greece: Akten; Ecocain; Lidocosil; Lidoderm; Lidonet; Lignospan; Narcodon; Neo-Lidocaton; Osagel; Sensolid; Trachilid; Utiblack; Versatis; Xylestesin-A; Xylestesin-S Special; Xylestesin; Xylocaine; Xylo!; Xyloonor Noradrenaline; Xylozan; Hong Kong: Lidocatonx; Xylestesin-A; Xylocaine; Xylocardx; India: Gesicain; Lignocad; Lignocip; Lignodent; Lignoloc; Lignosafe; Lignox; Lox; Loxicard; Nummit; Otidrop; Tivisionx; Xylocaine; Xylocard; Indonesia: Extracainex; Garianesx; Lidodex; Lidonestx; Pehacain; Xylocaine; Ireland: Lignospan; Versatis; Xylocaine; Xylocardx; Israel: After Burn; Betacainex; Esracain; Lidocadren; LidoPenx; Lignospan; Octocaine; Stud 100; Xylocaine; Xyloonor Noradrenaline; Italy: Basicaina; Ecocain; Lident Adrenalina; Lident Adrenor; Lidofast; Lidomolx; Lidosen; Lidrier; Luan; Neo-Lidocatonx; Odontalgx; Ortoderminax; Xilo-Mynol; Xylocaina; Xyloonor; Xyloplyina; Japan: Penles; Malaysia: Denkan; Lakan; Xylocaine; Xylocardx; Mexico: Betacainex;
Hipoden; Pharmacaine; Pisacainax; Rucainx; Sensipharma; Sunicainex; Undorlan; Unicainex; Uvegax; Xylocainex; Netherlands: Dentiformax; Dentinox; Lepanx; Lignospanx; Nolaid; Otalex; Trachisanx; Unguentum contra haemorrhoides PCHx; Xylocaine; Xylocardx; Norway: Versatis; Xylocainx; Xylocardax; New Zealand: Nurocainx; Virasolve; Xylestesin-Ax; Xylocaine; Xylocard; Philippines: Dentocaine; Enducainx; Epicainex; Lygnonex; Nobucainex; Xepacainex; Xylocainex; Xylocardax; Poland: Lidoposterin; Xylocaine; Portugal: Lambdalex; Lidoject; Lidonostrum; Lincainx; Octocainex; Vessatis; Xilonibsa; Xylocainex; Xylocardax; Russia: Dynexan A (Динексан A); Gelicain (Геликаин); Licaine (Ликаин); Lidochlor (Лиодхлор); Luax (Луан); Versatis (Версатис); South Africa: Lidocatonax; Lignospan Specialx; Neo-Lidocatonx; Peterkainenx; Pharmacainex; Remicainex; Remicard; Xylocaine; Xylotoxx; Singapore: Dubex; Gesicain; Lakan; Lignopadx; Xylestesin-Ax; Xylocaine; Xylocard; Spain: Aerodermax; Anestecidan Noradrenalinx; Anestecidan Simplex; Cidancainx; Curadentax; Dermovagisil; Lambdalina; Llorentecainax; Noradrenal; Neo; Octocainex; Versatis; Xilonibsa; Xylocainax; Xylocainex; Xylocardax; South Africa: Versatis; Thailand: Rocaine; Drocainil-A; LD-Caineax; Lido Sprayx; Lidocation; Lidocatonax; Locana; Medicaine; Neo-Lidocaton; Udocainx; Xylocaine; Xylocardax; Turkey: Anestol; Aritmal; Jetmonal; Jetokain; Jetosel; Ksildin; Laconest; Lidestol; Lidobaq; Lidosel; Locanest-A; Lokalen; Monocainex; Xylocainex; United Arab Emirates: Ecocainex; United Kingdom: Dequaspray; Laryng-O-Jet; Lignostab-Ax; Lignostab-Nx; LMX4; Mouth Gelax; Pensacaine with Adrenalineax; Premjact; Rinsteadx; Stud; Vagisil; Versatis; Xylocaine 2% Plainx; Xylocaine; Xylocaine; Xylocardax; Xyloxx; UK: Versatis (Версатис); United States: Akten; AneCream; Anestacon; Anestafomax; Dentipatchx; Dermaflexx; Dilocaine; Dr Scholl's Cracked Heel Relief; Duo-Trach Kit; L-Cainex; L-M-X; LC-4; LC-5; LidaMantlex; Lidoderm;
Multi-ingredient Preparations (Latest modification: 15-Nov-2013)

The symbol ¤ denotes a preparation which is discontinued or no longer actively marketed.

Argentina: Acemuk L; Antihemorrhoidal; Antihemorrhoidal; Betnovate
Antihemorrhoidal¤; Bideon; Carnot Colutorio; Carnot Topico; Ciriax Otic L; Cristalomicina NF; Dafne; Emla; Empecid Pie; Epiprocto¤; Epiprocto; Esme Topico; Excellentia Antihemorrhoidal; Fisioderm; Gamma-Scab; Hemorroisan; Instillagel¤; Iriqal; Kytonon ABC; Labsa Otic L; Lidocort Proct; Linfol; Magnal; Mantus; Manzan Plus; Merthiolate Anestesico; Muco-Anestylix; Naxo TV; Nene Dent NF; Otidrops; Otosporin L; Oxa Sport; Platsul A; Procto-Glyvenol; Procto-Ikatral; Procto-Metadyne; Proctocrem; Proctyl HC; Reacur¤; Refenax Caramelos Expectorantes; Sincerum Biotic L; Strepsils Plus; Sulfadiazina de Plata; Sulfaplat; Tratomax; Vagilen; Xilocler; Xyloprocto; Australia: Actifed Anaesthetic¤; Animine; Ansene L¤; Caladryl¤; Calistaflex¤; Cold Sore Balm¤; Cophenylcaine; Dental Ointment¤; Dequadin Mouth Ulcer Paint¤; Dermocaine¤; Emla; Gum-Ese¤; Hemocane; Le Tan Burn Relief¤; Lip-Sed¤; Logicin Rapid Relief; Medi Creme; Mediderm¤; Medijel; Paraderm Plus¤; Paxyl; Sedagel; Septacene¤; SM-33 Adult Formula; SM-33; Soov Bite; Soov Burn; Soov Cream; Soov It; Strepsils Anaesthetic¤; Strepsils Numbing; Strepsils Plus¤; Tuscodinx¤; Tusselix Cough Silencers¤; Virasolve; Xylocaine Jelly with Chlorhexidine¤; Xyloproct; Austria: Anoreine mit Lidocain¤; Cathejell mit Lidocain; Clinit¤; Dentinox; Depo-Medrol mit Lidocain¤; Doloproct; Doxiproct mit Dexamethason¤; Doxiproct¤; Emla; Instillagel; Lemocin; Leukase-Kegel¤; Oraqix; Otalgan; Procto-Glyvenol¤; Procto-Synalar¤; Sanoral¤; Steros-Anal¤; Tongill¤; Uromont; Xylestesin¤; Xylonor;
Belgium: Akinspray; Angin-San; Anginol-Lidocaine; Angiocine; Anusol; Aseptosyl; Biogaze; Bucco-Spray; Buccosan; Buccoseptine; Cathejell; Colludol; Depo-Medrol + Lidocaine; Dequalid; Dolanal; Doloproct; Emerxil; Emla; Hemosedan; Hibitane; Instillagel; Kenoidal; Lemocin; Medica; n-Tricidine; Onctose a l'Hydrocortisonex; Orofar Lidocaine; Ororhinathioliol; Panotile; Pantricine; Procto-Synalar; Rado-Spray; Sedasept; Strepsils + Lidocaine; Syngel; Trianal; Tricidine Dequalinium; Tricidine; Tympalgine; Tyro-Drops; Xyloproct; Brazil: Acidern; Acti Valda Diet; Adermykon-Ç; Amigdalol; Antimais Septico; Antiseptico Hertz; Cortegripan; Elotin; Emla; Gotas Ototilan; Hemodase; Hemofleb; Iodocaine; Kuramed; Lidosporin; Malvatricin Spray; Medicaina; Nene Dent N; Novaboin; Osmotil; Otauril; Otigent; Oto-Ped; Oto-Xilodase; Otocort; Otodol; Otofenicol-D; Ototlogin; Otolin; Otomicina; Otomixyn; Otopex; Otosynalar; Ouvidonal; Ozonyl Aquoso; Panotil; Plenogripe; Proctium; Procto-Glyvenol; Proctosan; Profenicol; Rectanux; Salvelox; Spray Anti-Septico; Supositorio Hamamelis Compostox; Um Segundo; Varizol; Xilodase; Xyloproct; Canada: Antibiotic Cream; Antibiotic Plus; Avon Footworks Cracked Heel; Baciquent Plus Pain Reliever; Bactine; Banana Boat Sooth-A-Caine; Coba-12; Complete Antibiotic Ointment; Depo-Medrol with Lidocaine; Dr Scholl's Cracked Heel Relief; Emla; Family Medic First Aid Treatment; Instillagel; Lidomyxin; Lidosporin; Lipsorex Plus; Medi-Quick; Neutrogena Anti-Itch; Otizol-HC; Ozonol Antibiotic Plus; Polysporin Complete; Polysporin For Kids; Polysporin Plus Pain Relief; Polysporin Plus Pain Relief; Xylonor; Xylonor; Chile: Calmanente de Aftas; Contralmor; Endogel Esteril; Euproct; Eutecaina; Faxet; Gotalgic; Gotas Otologicas; Indocalm; Otazorl; Oticum; Otolisan; Otoseptil; Platsul A; Pomada Antihemorroidal; Procto-Glyvenol; Proctogel; Proctoplex; Solarcaine Aloe Vera Gel; Tru; China: Emla (恩纳); Kamistad (甘美达); Rui Li Tai (瑞立泰); Titanoreine (太宁); Wan Yan Ting (万全亭); Ya Bing (雅兵); Yu Luo Shu (毓罗纾); Yu Wu Tai (玉五太); Czech Republic: After Burn; Alvogyl; Brand- und Wundgel; Calgel; Clenigen; Dentinox N; Dobexil Plus; Dobexil;
Doxiproct Plus; Doxiproct; Emla; Instillagel; Kamistad; Mastu Sx; Orofar; Otipax; Panlidx; Procto-Glyvenol; Rapyden; Seduxen RGx; Strepsils Plus; Titanoreinex; **Denmark:** Betnovat Rektalx; Doloproct; Doloproct; Emla; Instillagel; Oraqix; Ralydan; Tapin; Throatx; Xylocain Compx; Xylocain Klorhexidinx; **Finland:** Betnovat Compx; Depo-Medrol cum Lidocain; Emla; Neoproct; Oraqix; Tapin; Xyloproctx; **France:** Aftagel; Alvoqyl; Anesderm; Aurigoutte; Biodicainex; Buccawalterx; Caustinerf Arsenical; Caustinerf sans Arsenic; Cirkan a la Prednacinolone; Codotussyl Maux de Gorge; Collu "S"x; Colludol; Collunosolx; Dermiclonex; Dermocalmx; Devitasol Arsenicalx; Dicaqex; Dragee Vaubanx; Emla; Emlapatch; Ergixx; Glyvenolx; Humex Gorge Irriteex; Humex Mal de Gorge; Ibix; Instillagel; Iodopenghax; Lao-Dalx; Lysocalmsprayx; Onctose Hydrocortisone; Onctose; Oraqix; Osmogel; Otipax; Otomidex; Otoralgyl a la phenylephrinex; Otoralgyl sulfamidedx; Panotile; Percase-Lx; Pharyngine a la Vitamine Cx; Post-Penqha; Propofanx; Pulparthrol; Pulperyl; Rapydanx; Sedapulpx; Strepsils Lidocaine; Strepsilspray; Titanoreine Lidocaine; Traumalgylx; Valda Mal de Gorgex; Vicks Soulagilx; Vocadys; Xogel; Xylonor; Yranicid Arsenical; Yranicid sans Arsenic; Yranol Eugenole; Ziacaine; Ziagel; **Germany:** Anaesthecomp Nx; Anaesthesin akutx; Anesderm; Antiphlebinx; Brand- und Wund-Gel Eu Rhox; Bufeproctx; Cathejell mit Lidocainx; Dentinox N; Dexa-Phlogont Lx; Doloproct; DoloTendinx; Dorithricin Limonex; Duo-Norgesic Nsx; Dynexan Mundgel; Emla; Eulatin Nsx; Faktu akutx; Farco-Uromycinx; Haemomacx; Hamo-ratiopharm Nsx; Hamoaqil plusx; Hexamon Bufexamacx; InfectoGigi; Instillagel; Jelliproct; Kamistad; Lemocin Flexibelsx; Lemocinx; Leukase N; Leukasex; Logomed Hamorrhoidenx; Mastu akutx; Medivarsinx; mono-Hepagrisevitx; mykoproctx; Neuro-Fortaminx; Oraqix; Otodolor; Otolitan N farblosx; Otolitan N mit Rivanolx; Panotile Nsx; Parodontal; Polypharm-Zahnungsgel Nsx; Praesidinx; Procto-Jellinx; Proctoparf; Rectoparin Nsx; Spondylonx; Steros-Analx; Supertendin 2000 Nsx; Supertendin 3000x; Supertendin; Trachisanx; Trachitolx; Ultra-Demoplasx; Uro-Stillosonx; Uromycinx; Vulneralx; Vulnostadx; Wick Sulagil; Wund- und Brand-Gel Eu Rhox; Xylestesin Pumpsprayx; Xylocainx; **Greece:** Doloproct; Emla; Funis;
Instillagel; Opralix; Orocil Lido; Paroticin; Prinex; Procto Synalar-N; Procto-Glyvenol; Procto-Synalar N; Rapydan; Strepsils Plus; Trachisan; Xylocream; Xyloproct; **Hong Kong**: Alox; Alphate; Anso; Aselan; B-Gel; Burn Cream; Co-Phenylcaine; Cortison Kemicetine; Dentox Teething Gel; Depo-Medrol with Lidocaine; Emla; Instillagel; Kamistad Gel N; Kamistad; Lidiprine; Logicin Rapid Relief; Mastu S; Medicremex; Medijel; Oraqesic; Otozambon; Pilelife; Soov Bite; Soov Cream; Strepsils Dual Action; Trachisan; Tri-Gel; Ultraproct N; Virasolve; Xyloproct; **Hungary**: After Burn; Aurobin; Dentinox N; Doloproc; Doxiprost Plus; Doxiprost; Ebrimycin; Instillagel; Mastu S; Mebucain; Mebucain; Otipax; Phlogosam; Strepsils Plus; **India**: Adcort; Advin-NC; Anaebell; Anaproct; Anocream; Anomex; Anovate; Arima; Asthesia; Atlasol; BC-Zole; Beclocin-O; Becmet-CG; Bestec; Bonzela; Caltec; Candidbiotic; Candid Ear Drops; CBL; CLCD; Clenora; Clobiotic; Clocain; Dentogel; Dentra; Dewax; Dologel-CT; Dologel; Drep; Emlap; Excan; Fungi-BC; Fungidrops; Genoplex Forte; Infabact; Kemicetine Otological; LBC; Mycotic; Nitra-Dent; Olotic; Ora-Sore; Orasia; Oravin; Orex-Lo; Otek-AC Plus; Otek-AC; Otek-Q; Otichek; Otiden; Otiderm; Otiflox; Otina; Otocin-O; Otocin; Otoclean; Otocos; Otosym; Pilovate; Shield; Surfaz; **Indonesia**: Borraginol-S; Dolones; Emla; Estesia; Haemocaine; Lemocin; Liposin; Mexochrome; Nelicort; Otilon; Otopain; Otopraf; Otozambon; Topsy; Ultraproct N; **Ireland**: Anbesol; Depo-Medrone with Lidocaine; Emla; Hemocane; Instillagel; Lypsy! Cold Sore Gel; Medijel; Oraqix; Perinal; Rapydan; Soothake Toothache Tincture; Strepsils +Plus Anaesthetic; Strepsils Dual Action; Xylonor; Xyloproct; **Israel**: Alvoqy; Cathejell with Lidocaine; Clearocin; Cyclopentolate; Depo-Medrol with Lidocaine; Duo-Caine; Emla; Instillagel; Lemocin; Medijel; Oracort E; Perinal; Pitrisol; Procto-Glyvenol; Strepsils Plus; Whitfield Plus; Xylonor; Xyloproct; **Italy**: Adrenosin Composto; Algolisin; Aminomal con Antiasmatico; Anauran; Antisettico Astringente Sedativo; Antrolin; Asmarectal; Aurizon; Betullosin; Binevriplus; Bioepark; Brolumin; Cortanest Plus; Cortanest; Cortevit 100; Cortiplex Forte; Creosoto Composto; Cromacort; Depo-Medrol + Lidocaina; Desalfa; Devigen;
Diprorecto; Doloproct; Doxiproct; Emla; Emorril; Etaproctenex; Eugenol-Guaiacolo Composto; Exepin Cortex; Folincortex; Fosfozimin; Glutacortin; Lesten; Lido-Hyal; Lidocaina Spray; Mixotone; NE 300; Nefluan; Nucleo-Cortex; Nucleonevrina; Oraqix; Otobiotic; Pasta Arsenicale; Pasta Devitalizzante; Proteroxyna; Ralydan; Recto Menaderm; Resina Carbólica Dentilnex; Rubidiosin Composto; Sinrinal; Spasen; Stasten C; Tridodilan; Ustiosan; Vagisil; Xylestesina-S; Xylestesina; Xylohor; Xyloproct; Zincosin; Japan: EMLA, New Una Cool; Sin Una Cool Liquid; Malaysia: Cathejell with Lidocaine; Dentinox Teething Gel; Emla; Lipro; Liproct; Medijel; Oral-Aid; Soov Bite; Strepsils Dual Action; Trachisan; Xyloproct; Mexico: Alosol; Angenovag; Dermanol; Dexne; Doxiproct Plus; Doxiproct; Emla; Ercal; Herklin NF; Herklin; Innobion; Instillagel; Litiset; Nene Dent; Neutralin; Odexan; Orecil NF; Otalgan; Otilin; Oto Eni; Pharbrix; Procto-Glyvenol; Quinoflox Otico; Synalar O; Trineurovita Compuesto; Xyloderm; Xyloproct Plus; Netherlands: Anaesthesia; Cathejell; Depo-Medrol + Lidocaine; Emla; Instillagel; Noxacorn; Oraqix; Panotile; Pliaglis; Rapydan; Theranal; Trachitol; Trianal; Urogliss; Will-Anal; Xyloproct; Zwitsanal; Norway: Depo-Medrol cum Lidocaín; Emla; Oraqix; Rapydan; Tapin; Xyloproct; New Zealand: Cold Sore Balm; Depo-Medrol with Lidocaín; Dermocainex; Doxiproct; Emla; Kenoid; Medicremex; Medijel; Oraqix; Paraderm Plus; Solarcaîne Aloe; Soov Bite; Soov Burn; Soov Cream; Soov Gel; Strepsils Plus Anaesthetic; Topicaine; Xylocaine with Chlorhexidine; Xyloproct; Philippines: Cathejell; Doloproct; Emla; Emlocaine; Orofar-L; Procto-Glyvenol; Supravis; Ziladent; Poland: Aesculan; Bobodent; Calgel; Comarol; Dentinox N; Depo-Medrol z Lidokaina; Emla; Lidodent; Neo-Aesculan; Orofar Max; Orofar; Procto-Glyvenol; Procto-Hemolan; Tytanoreina; Portugal: Anbegelex; Anucet; Anucet; Cathejell; Depo-Medrol com Lidocaina; Doxiproct Plus; Doxiproct; Emla; Instillagel; Oraqix; Orofar; Otipax; Otolys; Procto-Glyvenol; Proctonostrum; Rapydan; Synalar Rectal; Ultraproct; Vigitem; Xilonibsax; Russia: Anauran (Анауран); Aurobin (Ауробин); Calgel (Калгель); Candibiotic (Кандибиотик); Cathejell with Lidocaine (Катеджель С
Лидокаином; Consol (Консол); Dentinox (Дентинокс); Dologel (Дологель); Doloprokt (Долопрокт); Emla (Эмла); Folicap (Фоликап); Hepazolon (Гепазолон); Herpferon (Герпферон); Instillagel (Инстиллагель); Kamistad (Камистад); Nefluan (Нефлуан); Oflomelid (Офломелид); Otipax (Отипакс); Procto-Glyvenol (Прокто-Гливенол); Proctosan (Проктозан); Strepsils Plus (Стрепсилс Плюс); Theraflu Lar (Терафлю Лар); South Africa: Anbesol®; Cathejell with Lidocaine; Depo-Medrol with Lidocaine; Depo-Medrone med lidokain®; Dequadin Mouth Paint; Dequamed®; Emla; Strepsils Plus; Topla; Singapore: Beathricin; Co-Phenylcaine; Dentinox Teething Gel; Dettol®; Dinopen®; Emla; Kamistad®; Lignosporin®; Logicin Rapid Relief; Medijel; Oracort E; Oral Aid; Soov Bite; Soov Cream; Strepsils Max Plus; Trachisan®; Trachisan; Xyloproct®; Spain: Aldo Otico®; Ampipulmox®; Amplibiot®; Anestina Braun®; Anginovag; Anso; Broncosolvente Mucolitic®; Curapic®; Curinex®; Cusipen Balsamico®; Cuispray®; Dalux Bronquial®; Dequadin Complex®; Doctofril Antiinflamat®; Doloproct; Emla; Eucardine®; Hepabionta®; Hepro; Kanamorgens Balsamico®; Kanapomadax®; Ladivonsim Liquido®; Lidobama Complex®; Lidobama Plus®; Nasal Rovi®; Neodesfila®; Neospray®; Oraqix; Otomidrin; Panotile®; Penisintex Balsamico®; Pliaqlis; Polirino®; Proctium®; Recto Menaderm®; Rinocomplet®; Stoma Anestesia Dental®; Strepsils Lidocaina; Supra Cortex Fortisimo®; Synalar Rectal; Tetra Hubber Balsamico®; Titanorein; Tosmina Retard®; Tothepal®; Trigon Rectal®; Vanadian®; Vigorcomplex®; Xilorroidal®; Xylonibsax®; Xylobron®; Sweden: Depo-Medrol cum Lidocain; Depo-Medrone med lidokain®; Doloproct; Emla; Instillagel; Oraqix; Orstanorm med heparin®; Rapydan; Tapin; Xyloproct®; Switzerland: Acide acetylsalicylique comp. "Radix"®; Adrectal®; Anesderm; Angiben; Angina MCC; Anginazol; Anginova; Angisan; Baume Dalet; Carmol®; Cathejell N®; Caustinerf forte®; Citropain nouvelle formule; Clinit®; Collunosol-N; Deaftol®; Decax®; Demo baumex®; Demo-Rhinil®; Demostan N®; Demostan®; Dentinox; Depo-Medrol Lidocaine; Diabetosan®; Doxiproct Plus; Doxiproct; Drossadinetten; Drossadinol®; Emla; Emoform®; Euceta Pic®; Euproctol N®; Euproctol®; Fenipic; Flavangin®; Gem nouvelle formule contre
le mal de gorge; Gemx; Haemocortinx; Haemolanx; Hextrilettenx; Hextrimintx; Ibufen-L; Impulsx; Instillagelx; Larocalx; Lemocin; Lidazon Actilong; Lidazon; Lido-Hyalx; Lidohepx; Mebx; Mebuca-Orange; Mebucalets f; Mebucaliquid; Mebucasol f; Mebucaspray; Neo-Anqin avec lidocaine et chlorhexidine; Neo-Anqin Lidox; Neo-Anqin; Neo-Bucosinx; Neo-Urtisanx; No Pic; Novomint Nx; Novophenx; Oraqix; Orofar; Osa Gel de dentition; Osmogelx; Otipax; Otoralgylx; Panotile; Parapicx; Pastilles contre le mal de gorgex; Pastilles pectorales du Dr. Welti; Peru Stick; Pharmacard Family Maux de gorge; Procto-Glyvenol; Procto-Synalar N; Proctox; Raceestyptinex; Rotpunkt Apotheke nouvelle formule pastilles contre le mal de gorge; Sangerol; Sano-Anqinx; Siniphenx; Solmucaine; Steros-Analx; Stilex; Stilex; Sulgan N; Sulgan N; Swidro nouvelle formule pastilles contre le mal de gorge; Titanoreinex; Trachisanx; Tyroqualex; Tyrothricinx; Wulnasinx; Xylestesinx; Xylocain CO2x; Xylonox; Zurcher Bahnhof Apotheke pastilles contre le mal de gorge nouvelle formule; Thailand: Archifen; Cathejell with Lidocaine; Cibisx; Depo-Medrol with Lidocainex; Emla; Kamistad Gel N; Kamistadx; Liprikaine; Mastu Sx; Nalgin-P; Orofarx; Otosamthongx; Scheriproct N; SM Oto; Sore Mouth Gelx; Strepsils Maxipluzz; Throatsil Plus; Xyloproctx; Turkey: Calgel; Cathejell; Dentinox; Difestol; Doloproct; Emla; Ovadril; Procto-Glyvenol; Stilex; United Arab Emirates: Haemoproct; New BCool; United Kingdom: Anbesol; Anodesyn; Betnovate Rectal Ointmentx; Bismodynex; Bonjela Teething Gel; Bonjelax; Bradosol Plusx; Calgel; Cathejell with Lidocaine; Covonia Throat Spray; Dentinox Teething Gel; Depo-Medrone with Lidocaine; Dermidex; Dettol; Emla; Germoloids HC; Germoloids; Hemocane; Igux; Instillagel; Lanastingx; Lypsyl Cold Sore Gel; Medijel; Oraqardx; Oral-B Oral Gelx; Oraqix; Perinal; Pliaqlis; Rapydanx; Rinstead Teething Gelx; Solarcaineox; Soothake Toothache Tincture; Strepsils Pain Relief Plusx; Ulcaidx; Woodwards Teething Gel; Xylocaine Antisepticx; Xylocax; Xyloproct; Ukraine: Anginovaq (Ангиноваг); Aurobin (Ауробин); Candibiotic (Кандибиотик); Cathejell Lidocaine (Катеджель с Лидокаином); Dentinox N (Дентинокс Н); Dioxisol (Диоксизоль); Doloproct (Долопрокт); Emla (Эмла); Herpferon
(Герпферон); Inflarax (Инфларакс); Kamident (Камидент); Kamistad (Камистад); Oflocain (Офлокайн); Ofipax (Отипакс); Procto-Glyvenol (Прокто-Гливенол); Proctosan (Проктосан); Strepsils Plus (Стрепсилс); Theraflu LAR (Терафлю ЛАР); Trachisan (Трахисан); United States: AnaMantle HC; Bactine Antiseptic; Bactine Pain Relieving Cleansing; Banadyne-3; Campho-Phenique Antibiotic Plus Pain Reliever Ointment; Clomycin; Duocaine; Emla; Hawaiian Tropic Cool Aloe with I.C.E.; LanzaGel; LanzaPatch; LidaMantle HC; LidoCort; LidoPro; Medadyne; Medi-First with Lidocaine; Medi-Quik; Medi-Quik; MG Cold Sore Formula; Mycitracin Plus; Neosporin Plus; New Terocin; Oraqix; Pliaglis; ProCoMycin; ProTech; Skeeter Stik; Solarcaine Aloe Extra Burn Relief; Spectrocin Plus; StaphAseptic; Synera; Tecnu First Aid; Terocin; TheraPatch Cold Sore; Tribiotic Plus; Unquentine Plus; Xyralid; Venezuela: Audocaina; Bargonil; Benzodiazol; Calgel; Cepacol BE; Flemicaine; Gencivol Compuesto; Isospray; Lafarcaina; Laimoqualin; Otandrol; Otirilin; Otodon; Procto-Glyvenol;

**Adjuvant to Preparations** (Latest modification: 15-Nov-2013)

The symbol ¤ denotes a preparation which is discontinued or no longer actively marketed.

**Argentina:** Adaxil; Amoxitenk Respiratorio; Amplibenzatin Bronquial; Artrilase; Aseptobron Ampicilina; Bago B1 B6 B12; Cefalomicina; Cefamezin; Mecanyl; Mefoxin; Pen di Ben; Pluricefox; Reumine; Rivacefin; Tunik B12; Tunik; Vartalon Complemento; Zienam; Zyplast; **Australia:** Budodouze; Reverin; Zyderm; Zyplast; **Austria:** Ambenex; Antipen; Embolex; Gramaxin; Pseudocef; Rheumesser; Rocephin; Troparin compositum; Zienam; Zolicef; Zyderm; Zyplast; **Belgium:** Kefzol; Mervan; Monocid; Rocephine; **Brazil:** Ampifar Balsamico; Analgex Cx; Butazolidina; Cefoxin; Ceftriax; Cianotrat-Dexa; Eucaliptol; Flogotisol; Gripamil; Gripefago Cx; Gripsay; Injeflex; Killgrip; Neoceftriona; Olfen;
Rocefin; Rofoxin; Soma Balsamico; Terramicina; Tetrapulmo;
Trinalgen; Vitatonus Dexa; Voltaflan; Canada: Neo-Bex; Chile: Bioflex;
Cidoten Rapilento; Cronolevel; Depo-Medrol; Dolotol 12; Neurobionta;
Prevepen Forte; Tol 12 Plus; Viartril; China: Olfen (奥尔芬); Czech Republic: Dona; Novosef; Olfen; Rocephix; Finland: Rocephalin;
France: Cefacidal; Cefaloject; Claforan; Kefzol; Rifocine; Rocephine;
Terramycine Solu-Retard; Transcyclinex; Unacim; Zinnat; Zyderm;
Zyplast; Germany: Ambene Comp; Ambene; Antineuralgicum (Rowo-633); Asthmalyticum-Ampullen N (Rowo-210); Bipensaar; Cardiotonic (Rowo-15); Clinix; Demplas; Dexamonozon N; Dona 200-S;
Embolex NM; Eukalsan forte; Glanoide cerebralex; Glanoide corealex;
Glanoide diencephalex; Glanoide pancrealex; Glanoide renalex; Glanoide retinalex;
Glanoide testoidalex; Glanoide B; Hepagrisevit Forte-N;
Hepatofalk; Hydracillinx; Ibuprof; Keltican N; Lexobene; Medivitan;
Megacillin forte; Megacillin; Mofesal N; Neuro-AS; Neuro-Brachont N;
Neuro-Demplas; Novirell B Duox; Novirell B; Pendysin; Rocephin; Rowo-216; Rowo-298; Rowo-52x; Telbibur N; Vita-Brachontx; Zyderm;
Zyplast; Greece: Apotel; Hong Kong: Ancopix; Hepatofalk; Olfen;
Tapain; Trabit; Viartril; Zyderm; Hungary: Cefam; Claforan; Dona;
Milgamma N; Mydeton; Olfen; Rocephin; India: Calcindon; Oxyteta;
Terramycin; Indonesia: Bioneuron; Neurobiovit; Neurophil; Neurotrat;
Israel: Betrivit; Zyplast; Italy: Abiocef; Acef; Adinepar; Alomen;
Aminomal; Ateroid; Auricid; Avocinax; Aximad; Axobat; Bacidx; Batixim;
Betabiotic; Bethacil; Biocilix; Biopiper; Biotassina; Bioticix; Bixon;
Cefabiozim; Cefadel; Cefam; Cefamezin; Cefaseptol; Cefazil;
Cefazonex; Cefiran; Cefobacterx; Cefociclin; Cefodie; Cefogerx;
Cefogran; Cefok; Cefomit; Cefonegx; Cefoperx; Cefoplus; Cefoprim;
Cefosint; Cefosporin; Cefovis; Cefraq; Cefumax; Cemadox; Centiax;
Chefir; Cilpier; Citicortex; Claforan; Clastidinx; Clavucarx; Clody;
Coxanturenasi; Dardum; Davixon; Daycef; Daytrix; Decacefx; Deixim;
Delius; Delsacidx; Diaxone; Diesporx; Dievrilx; Diezine; Diperilx; Dona;
Ecosette; Eftry; Emidoxin; Epicefx; Eposerin; Eraxitron; Erilx; FarecefRx;
Farecillin; Fidato; Firmacefx; Flrogoginx; Folinemic CortexRx; FolinemicRx;
FonexelRx; Fonicefx; Fonidex; FonisalRx; Fosforilasi; Framecefx; Frineg;
GibinapRx; Glicero-Valerovit; Iliaxonex; Imipem; IpacidRx; Ipazonex;
Kappacefx; Kedacilinax; Kefazonx; Kocefan; Krucefx; Lampocefx;
LampomandolRx; Lirgosin; Lisa; Liverastenx; Loricin; Mancef; Mandokefx;
MandolsanRx; MaxidRx; Mediperox; Mefoxin; Metacafx; Metafar; MetasalRx;
Metax; MetazolRx; MicrocidRx; Mionevrasi; Modicefx; Modiem; Modivid;
Monobiosx; Monobiotic; MonocidRx; Monoxar; NatrioxenRx; Natur B12Rx;
Necid; Nefazol; Neocetalfx; Neurolx; Niklod; Nilson; Nokid; NovobiocylRx;
Panatrx; PantacidRx; Pantoxon; ParecidRx; Peracil; PerasintRx; Perocefx;
Picillin; Piperital; Pipersal; Pipertex; PipracinRx; Praticefx; Prontokefx; Ragex;
Raikocef; Refotax; RenbiocidRx; Reparcillin; Rifocin; Rofecin; RocidRx;
Roxiden; Salocef; SantenolRx; Semipenil; Septomandolox; SetrioRx; Sicefx;
Silvercefx; SilzolinRx; SinevrileRx; Sintocex; SintoplusRx; Sirtap; Sofarcid;
Spectrocefx; Superox; SurgamyRx; TafoceRx; Taxime; TazobacRx; Tazocin;
Tienam; TifoxRx; Timecefx; Tomabefx; Tricortin; Trinevrina B6; Ultramicinax;
Unasyn; Unicefx; UnicidRx; ValecidRx; Valexime; Viartril Sx; Viracillinax;
VitalionRx; XameRx; Zariviz; Zimanel; ZolinRx; ZolisintRx; Zoncefx; Japan:
Cefamezin; Cefmetazon; Cefoperazin; Pentcillin; Mexico: Andociclina
Balsamicax; Benaxona; Bonadoxina; Butazolidina; Cefaxona; Ceftrex;
Ceftrilem; Centrifal; Claforan; Dexabion; Forvin; Fosfocil; Fot-Amsa;
Fotexina; Gadital; Kedacilinax; Limiprol; Megapenil Fortex; Megion;
ModividRx; Rocephin; TerbacRx; Terramicina; Tiaminal B12; Tirotax; Triadax;
Triaken; Tribe 12; TribedoxylRx; VikenRx; Netherlands: ZydermRx; New
Zealand: RocephinRx; Zyderm; Zyplast; Poland: Dicloratio; Milgamma N;
Mydocalm; Neoton; Olfen; Portugal: Monocid; Prevecillinax; Rocephin;
Russia: Ambene (Амбене); Combiliopen (Комбилипен); CompligamV
(КомплигамВ); Milgamma (Милгамма); Mydocalm (Мидокалм); Trigamma
(Тригамма); Vitaqamma (Витагамма); South Africa: Butrexx;
TerramycinRx; Singapore: CosmoDerm; CosmoPlast; Juvederm; Olfen;
ZydermRx; Spain: BacimexRx; Bactosone RetardRx; BactosoneRx; Becepal
Crudo; Bio Espectrum; Brisfirina; Brizolina; Bronco Pensusan; Bronquinflamatoria; Caricef; Cefa Resan; Cefacene; Cefadrex; Cefamusel; Cefaxicina; Cefizox; Cemetol; Claforan; Combitorax; Ampicilina; Cromaton Cortex; Dalamon; Daren; Dolo Coneurase; Elmuten; Epocelin; Espectrosira; Etro Balsamico; Etro; Exapenil; Mucomitico; Filoklin; Fosfocina; Gamma Citormina; Gobemicina Retard; Hepatoclamar; Hosbocin; Intercefal; Inzitan; Kurgan; Mefoxitin; Metabacter; Miliken Mucol Med Retard; Miliken Mucol Retard; Miliken Mucomitico; Monocid; Mucorex Ampicilina; Neo Penprobal; Neofazol; Neoflaina; Neopenyl; Neumobac; Neumobioc; Normofenicol; Normovite Antianemico Inyectable; Panestes Retard; Panestes; Penibiot; Lidocaina; Penisintex Bronquial; Pipril; Pirobiotic; Pridonal; Primafenx; Prinderin; Proxen; Pulmosterin Meta; Resan Mucomitico; Resan Retard; Resisten Retard; Retarpen Balsamico; Retarpen Mucomitico; Retarpen; Rocefalin; Sedionbel; Sinus; Tecfazolina; Trifosfaneurina B6; Trofi; Milina; Tusolone; Unasyn; Sweden: Rocephin; Switzerland: Ancopir; Arcored; Butadion; Celosporx; Cortisteron; Dexacortin-K; Embolex; LM; Halosporx; Olfen; Rifocinex; Rocephin; Tribeton; Thailand: Butax; Detamol; Fenacaine; Juvederm Ultra XC; Neo-Pyrazol; Nivagin; Olan-Gin; Paramol TP; Paranal-L; Temolan; Trabix; Umeda Para-J; Utofin; Vetamol; Viartril S; Turkey: Alfasid; Baktisef; Cefaks; Cefamezin; Cefizox; Cefozin; Cephaxon; Combicid; Desefin; Duobaktam; Duocid; Equiceft; Equizolin; Forsef; Iese; Iesp; Maksiporin; Mefoxim; Neurogriseovit; Nevakson; Nobecid; Novosef; Rifocin; Rocephin; Sefamax; Sefazol; Sulcid; Sulperazon; Tienam; Triaxon; Unacefin; Ukraine: Diclocain (Диклокайн); Dona (Дона); Megafen Plus (Мегафен Плюс); Milgamma (Мильгамма); Olfen (Олфен); Tolperil (Толперил); Vitaxon (Витаксон); United States: Perlane; Restylane; Terramycin; Venezuela: Briomet; Cefacidal; Complejo B Compositum; Deca-Lentermina Complex; Lentermina Complex; Mega-Neubion; Miovit; Neuribe; Rocephin; Rubrinal; Rubrinex; Tianex;
**Pharmacopoeial Preparations** (Latest modification: 06-Dec-2011)

**BP 2013:** Lidocaine and Adrenaline Injection; Lidocaine and Chlorhexidine Gel; Lidocaine Gel; Lidocaine Injection; Lidocaine Ointment; Sterile Lidocaine Solution; **USP 36:** Lidocaine and Prilocaine Cream; Lidocaine Hydrochloride and Dextrose Injection; Lidocaine Hydrochloride and Epinephrine Injection; Lidocaine Hydrochloride Injection; Lidocaine Hydrochloride Jelly; Lidocaine Hydrochloride Oral Topical Solution; Lidocaine Hydrochloride Topical Solution; Lidocaine Ointment; Lidocaine Oral Topical Solution; Lidocaine Topical Aerosol; Neomycin and Polymyxin B Sulfates and Lidocaine Cream; Neomycin and Polymyxin B Sulfates, Bacitracin Zinc, and Lidocaine Ointment; Neomycin and Polymyxin B Sulfates, Bacitracin, and Lidocaine Ointment;

**Homoeopathic Preparations** (Latest modification: 01-Jan-1995)

The symbol ✗ denotes a preparation which is discontinued or no longer actively marketed.

**Germany:** Echinacea Ro-Plex (Rowo-298)✗; Excitans (Rowo-216)✗; Magen-Darm Rowopan (Rowo-837)✗;