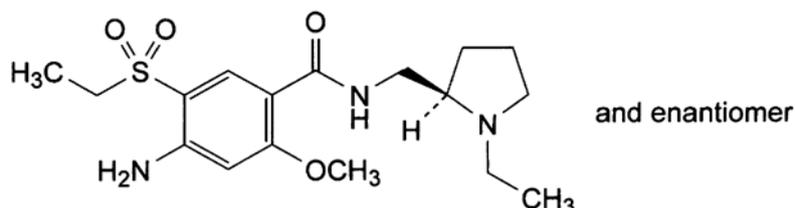


Amipride

PRODUCT INFORMATION

Name of the medicine

Amisulpride. The chemical name for amisulpride is 4-amino-*N*-[[*(2RS)*-1-ethylpyrrolidin-2-yl]methyl]-5-(ethylsulphonyl)-2-methoxybenzamide. Its structural formula is:



C₁₇H₂₇N₃O₄S

Molecular weight: 369.48

CAS No.: 71675-85-9

Description

Amisulpride is a white or almost white, crystalline powder. It is freely soluble in water, slightly soluble in ethanol (96%), and practically insoluble in chloroform and ether.

Amipride tablets contain 400 mg of amisulpride. The tablets also contain the following excipients: lactose, methylcellulose, sodium starch glycolate, microcrystalline cellulose, magnesium stearate, purified talc, macrogol 600, titanium dioxide and eudragit E100 (ARTG No. 1753). The tablets are gluten free.

Pharmacology

Pharmacodynamic properties

Amisulpride binds selectively to the human dopaminergic D₂ (K_i 2.8 nM) and D₃ (K_i 3.2 nM) receptor subtypes without any affinity for D₁, D₄ and D₅ receptor subtypes (K_i >1 μM). Unlike classical and atypical neuroleptics, amisulpride displays low affinity for serotonin, α-adrenergic, histamine receptor subtypes, muscarinic receptors and sigma sites.

In the rodent, it preferentially blocks postsynaptic D₂ receptors located in the limbic structures as compared to those in the striatum as indicated by its reversal of d-amphetamine-induced hyperactivity without affecting stereotypies. In addition, it does not induce catalepsy and it does not produce D₂ hypersensitivity after repeated treatment.

Moreover, it preferentially blocks presynaptic D₂/D₃ dopamine receptors, producing dopamine release responsible for its disinhibitory effects.

This atypical pharmacological profile may explain amisulpride's antipsychotic effect at higher doses through postsynaptic dopamine receptor blockade located in the limbic areas and its efficacy against negative symptoms, at lower doses, through presynaptic dopamine receptor blockade. In addition, the reduced tendency of amisulpride to produce extrapyramidal side effects may be related to its preferential limbic activity.

Pharmacokinetics

In humans, amisulpride shows an absorption peak at 3.5 hours after administration. The corresponding plasma concentration is 1834 ± 706 ng/mL after a 400 mg dose.

The volume of distribution is 5.8 L/kg. As plasma protein binding is low (16%), drug interactions due to displacement are unlikely.

The absolute bioavailability of amisulpride tablets is 48%.

Amisulpride is weakly metabolised: two inactive metabolites, accounting for approximately 4% of the dose, have been identified. The elimination half-life of amisulpride is approximately 12 hours after an oral dose.

50% of an intravenous dose is excreted via the urine, the majority as unchanged drug. 90% of the intravenous dose is eliminated in the first 24 hours. Renal clearance is in the order of 20 L/hour or 330 mL/minute.

Following a single intravenous dose, about 20% of the dose was recovered from the faeces, about 70% of which was as unchanged amisulpride. Hepatic metabolism has a limited role in healthy patients.

A high carbohydrate (CHO), low fat meal (14 g protein, 8 g fat, 108 g CHO) significantly decreases the AUC, T_{max} and C_{max} of amisulpride, but no changes were seen after a high fat meal. However, the significance of these findings in routine clinical use is not known.

Hepatic insufficiency

See **Precautions, Impaired hepatic function.**

Renal insufficiency

In patients with renal insufficiency, systemic clearance is reduced by a factor of 2.5 to 3. The AUC of amisulpride in mild renal failure increased twofold and almost tenfold in moderate renal failure. Experience is, however, limited and there is no data with doses greater than 50 mg.

Amisulpride is very weakly dialysed.

Limited pharmacokinetic data in elderly subjects (>65 years) show that a 10 to 30% rise occurs in C_{max} , $t_{1/2}$ and AUC after a single oral dose of 50 mg. No data are available after repeat dosing.

Clinical Trials

The efficacy of amisulpride in the treatment of schizophrenia has been established on the basis of eleven phase II and III studies conducted in 20 countries and involving 1,933 patients (1,247 treated with amisulpride). These studies form the basis of the registration documentation for amisulpride. Four of them are considered pivotal for efficacy in the treatment of acute exacerbations of schizophrenia and their results are summarised below.

Acute exacerbations of schizophrenia

In four well controlled double blind studies versus reference drugs in patients with acute schizophrenia according to DSM III-R and DSM-IV criteria, amisulpride was at least as effective as haloperidol, flupenthixol and risperidone. In addition to its global antipsychotic activity, amisulpride significantly alleviated secondary negative symptoms as well as affective symptoms such as depressed mood and retardation.

A four week double blind active controlled trial (n = 319) compared four fixed doses of amisulpride (100, 400, 800 and 1,200 mg/day) and a fixed dose of haloperidol (16 mg/day). A dose response relationship was clearly established in comparison to 100 mg/day, chosen as a potentially subtherapeutic dose in acute schizophrenia. Amisulpride at doses of 400 and 800 mg/day statistically significantly improved positive symptoms (BPRS total score, PANSS positive symptoms subscale) compared with amisulpride 100 mg/day. Amisulpride 800 mg/day was also statistically significantly superior to 100 mg/day for response rates based on the CGI.

Efficacy results were similar in the three other short-term controlled studies where amisulpride 800 mg/day was compared with haloperidol 20 mg/day (n = 191), amisulpride 1,000 mg/day with flupenthixol 25 mg/day (n = 132) and amisulpride 800 mg/day with risperidone 8 mg (n = 228). On BPRS total score and PANSS positive subscale, amisulpride was not found to be different from haloperidol and flupenthixol and showed equivalent efficacy to risperidone. Additionally, amisulpride significantly improved the response rate with CGI versus haloperidol.

Indications

Treatment of acute and chronic schizophrenic disorders, in which positive symptoms (such as delusions, hallucinations, thought disorders) and/or negative symptoms (such as blunted affect, emotional and social withdrawal) are prominent.

Contraindications

Hypersensitivity to the active ingredient or to other ingredients of the product.

Concomitant prolactin dependent tumours, e.g. pituitary gland prolactinomas and breast cancer.

Phaeochromocytoma.

Children up to puberty.

Lactation.

In combination with the following medication which could induce torsades de pointes:

- class Ia antiarrhythmic agents such as quinidine and disopyramide;
- class III antiarrhythmic agents such as amiodarone and sotalol;
- other medications such as bepridil, cisapride, sultopride, thioridazine, methadone, intravenous erythromycin, intravenous vincamine, halofantrine, pentamidine, sparfloxacin.

Levodopa: reciprocal antagonism between levodopa and neuroleptics (see **Interactions with other medicines**).

In hepatic impairment, amisulpride may be contraindicated to avoid the possible risk of adverse events due to an influence of the disease on amisulpride metabolism.

Precautions

Neuroleptic malignant syndrome (NMS) is a potentially fatal syndrome that has been reported in association with antipsychotic drugs, including amisulpride. Neuroleptic malignant syndrome, characterised by hyperthermia, muscle rigidity, autonomic instability, and elevated CPK, may occur. In the event of any symptoms which could suggest NMS, in particular hyperthermia, particularly with high daily doses, all antipsychotic drugs including amisulpride should be discontinued.

Hyperglycaemia has been reported in patients treated with some atypical antipsychotic agents, including amisulpride, therefore patients with an established diagnosis of diabetes mellitus or with risk factors for diabetes who are started on amisulpride, should get appropriate glycaemic monitoring.

Amisulpride is eliminated by the renal route. In cases of renal insufficiency, the dose should be decreased and intermittent treatment should be considered (see **Dosage and Administration**).

There are limited data on the potential for renally-cleared drugs to interfere with the clearance of amisulpride. Therefore, amisulpride should be used with caution with other renally excreted drugs, including lithium (see **Interactions with other medicines**).

The impact of hepatic impairment on hepatic metabolism and hepato-biliary excretion of amisulpride has not been studied. Amisulpride should be used with caution in patients with moderate or severe hepatic impairment.

Amisulpride can lower the seizure threshold. Therefore patients with a history of seizures should be closely monitored during amisulpride therapy.

In elderly patients, amisulpride therapy, like other neuroleptics, should be used with particular caution because of a possible risk of hypotension or sedation.

Caution should be also exercised when prescribing amisulpride to patients with Parkinson's disease since it may cause worsening of the disease. Amisulpride should be used only if neuroleptic treatment cannot be avoided.

Amisulpride causes an increase in plasma prolactin levels which is reversible after drug discontinuation. This may result in galactorrhoea, amenorrhoea, gynaecomastia, breast pain, orgasmic dysfunction and impotence. Acute dystonia (spasm torticollis, oculogyric crisis, trismus) may appear. This is reversible without discontinuation of amisulpride upon treatment with an antiparkinsonian agent.

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Extrapyramidal symptoms may occur: tremor, rigidity, hypokinesia, hypersalivation, akathisia. These symptoms are generally mild at optimal dosages and partially reversible without discontinuation of amisulpride upon administration of antiparkinsonian medication. The incidence of extrapyramidal symptoms which is dose related, remains very low in the treatment of patients with predominantly negative symptoms with doses of 50 to 300 mg/day.

Tardive dyskinesia characterised by rhythmic, involuntary movements primarily of the tongue and/or face have been reported, usually after long-term administration. Antiparkinsonian medication is ineffective or may induce aggravation of the symptoms.

Prolongation of QT interval

Amisulpride produces a dose dependent prolongation of the QT interval. This effect, known to potentiate the risk of occurrence of serious ventricular arrhythmias such as torsades de pointes, is enhanced by the existence of bradycardia, hypokalaemia, congenital or acquired long QT interval. Before any administration, and if possible according to the patient's clinical status, it is recommended to rule out factors which could favour the onset of this rhythm disorder:

- bradycardia less than 55 bpm (beats per minute);
- hypokalaemia;
- congenital prolongation of the QT interval;
- ongoing treatment with a medication likely to produce pronounced bradycardia (<55 bpm), hypokalaemia, slowing of the intracardiac conduction, or prolongation of the QT_c interval (see **Interactions with other medicines**).

Stroke

In randomised clinical trials versus placebo performed in a population of elderly patients with dementia and treated with certain atypical antipsychotic medicines, a 3-fold increase of the risk of cerebrovascular events has been observed. The mechanism of such risk increase is not known. An increase in the risk with other antipsychotic medicines, or other populations of patients cannot be excluded. Amisulpride should be used with caution in patients with stroke risk factors.

Preclinical safety data

An overall review of the completed safety studies indicates that amisulpride is devoid of any general, organ specific, teratogenic, mutagenic or carcinogenic risk. Changes observed in rats and dogs at doses below the maximum tolerated dose are either pharmacological effects or are devoid of major toxicological significance under these conditions. Compared with the maximum recommended dosages in humans, maximum tolerated doses are 2 and 7 times greater in the rat (200 mg/kg/day) and dog (120 mg/kg/day) respectively in terms of AUC. No carcinogenic risk relevant to humans was identified in the mouse (up to 120 mg/kg/day) and in the rat (up to 240 mg/kg/day), corresponding for the rat to 1.5 to 4.5 times the expected human AUC.

Reproductive studies performed in the rat, rabbit and mouse did not show any teratogenic potential.

Impaired renal function

Amisulpride is eliminated by the renal route. In cases of severe renal insufficiency, the dose should be decreased and intermittent treatment should be considered (see **Dosage and Administration**).

Impaired hepatic function

The impact of hepatic impairment on hepatic metabolism and hepatobiliary excretion of amisulpride has not been studied. Amisulpride should be used with caution in patients with moderate or severe hepatic impairment.

Effects on Fertility

Male rat fertility was unaffected by an oral amisulpride dose resulting in systemic drug exposure (plasma AUC) similar to that in humans, when treatment was carried out prior to mating. Female rat mating was reduced by concurrent amisulpride treatment, but it was normalised within days of cessation of dosing with overall fertility being unaffected, although some adverse effects were observed (see **Precautions, Use in pregnancy**).

Use in pregnancy (C)

There was no evidence of teratogenicity in embryofetal development studies in mice and rabbits following oral doses of up to 2 (mice) and 4 (rabbits) times the maximum recommended human dose based on body surface area, administered daily during the period of organogenesis. Oral treatment of female rats from prior to mating to late gestation or weaning, achieving systemic drug exposure (plasma AUC) similar to that in humans at the maximum dose, was associated with increased preimplantation loss, slight impairment of ossification and reduced pup weight gain to weaning. Teratogenicity was not observed.

Non-teratogenic class effect: Neonates exposed to antipsychotic drugs (including Amisulpride) during the third trimester of pregnancy are at risk of experiencing extrapyramidal neurological disturbances and/or withdrawal symptoms following delivery. There have been post-market reports of agitation, hypertonia, hypotonia, tremor, somnolence, respiratory distress, and feeding disorder in these neonates. These complications have varied in severity; while in some cases symptoms have been self-limited, in other cases neonates required additional medical treatment or monitoring.

Amisulpride should be used during pregnancy only if the anticipated benefit outweighs the risk and the administered dose and duration of treatment should be as low and as short as possible.

Use in lactation

It is not known whether amisulpride or its metabolites are excreted in animal or human breast milk. Breastfeeding is therefore contraindicated during amisulpride treatment.

Carcinogenicity

In carcinogenicity studies, amisulpride was administered in the diet of mice and rats for up to two years. Treatment of mice was associated with increases in malignant mammary gland tumours and pituitary adenomas in females at all dose levels, but there was no tumorigenic response in males (doses were equivalent to 0.1, 0.2 and 0.5 times the maximum human dose of 1,200 mg/day on a body surface area basis). Treatment of rats resulted in increased incidences of malignant mammary gland tumours in both sexes, malignant pituitary tumours and adrenal medullary pheochromocytomas in males, and malignant pancreatic islet cell tumours in both sexes, at doses achieving lower systemic drug exposure (plasma AUC) than in humans at the maximal recommended dose. Increases in mammary gland, pituitary, adrenal and pancreatic endocrine tumours in rodents have been reported for other antipsychotic drugs, and are considered to result from increased prolactin secretion.

The relevance of prolactin mediated endocrine tumours in rodents for human risk is unknown. In clinical trials, amisulpride substantially elevated plasma prolactin concentrations, although to date neither clinical nor epidemiological studies have shown an association between chronic administration of neuroleptic drugs and mammary tumorigenesis. However, since tissue culture experiments indicate that about one-third of human breast cancers are prolactin dependent *in vitro*, amisulpride should be used cautiously in patients with previously detected breast cancer or in patients with pituitary tumours (see **Contraindications**).

Genotoxicity

Amisulpride showed no genotoxicity in *in vitro* tests for bacterial gene mutation, or in *in vitro* and *in vivo* tests for clastogenic activity.

Effect on ability to drive or operate machinery.

Even used as recommended, amisulpride may affect reaction time so that the ability to drive vehicles or operate machinery can be impaired.

Interactions with other medicines

A number of drugs can increase the risk of ventricular arrhythmias including torsades de pointes. The use of the following drugs is contraindicated:

- class Ia antiarrhythmic agents such as quinidine and disopyramide;
- class III antiarrhythmic agents such as amiodarone and sotalol;
- other medications such as bepridil, cisapride, sultopride, thioridazine, methadone, intravenous erythromycin, intravenous vincamine, halofantrine, pentamidine, sparfloxacin;

Levodopa: reciprocal antagonism of effects between levodopa and neuroleptics.

Caution is required with the use of the following medicines:

- medicines which induce bradycardia, such as bradycardia inducing calcium channel blockers (diltiazem, verapamil), beta-blockers, clonidine, digitalis;
- medicines which can cause hypokalaemia, such as diuretics, stimulant laxatives, intravenous amphotericin B, glucocorticoids, tetracosactides;
- neuroleptics such as chlorpromazine, trifluoperazine, pimozide, haloperidol, imipramine antidepressants, lithium.

Concomitant use of amisulpride with other antipsychotics may increase the risk of developing neuroleptic malignant syndrome.

Amisulpride may enhance the effects of alcohol.

Amisulpride may enhance the effects of the following drugs:

- CNS depressants including narcotics, anaesthetics, analgesics, sedative H₁-antihistamines, barbiturates, benzodiazepines and other anxiolytic drugs, clonidine and derivatives;
- antihypertensive drugs and other hypotensive medications.

A placebo controlled study of concomitant use of lithium carbonate 500 mg twice daily and a low dose of amisulpride (100 mg) twice daily in healthy young male volunteers showed no effect of amisulpride on the pharmacokinetics of lithium. A small trend towards prolongation of the QT_c interval was observed when lithium and amisulpride were coadministered but is not regarded as clinically important.

A study of the effect of concomitant use of cimetidine on amisulpride excretion has not been conducted.

In vitro studies using human liver microsomes and cryopreserved human hepatocytes did not show evidence of significant amisulpride metabolism. Based on these results, it is unlikely that drug interactions involving amisulpride would occur due to inhibition or induction of cytochrome P₄₅₀ mediated metabolism.

Adverse Effects

Clinical trial data

The following adverse effects have been observed in controlled clinical trials in at least 1% of treated patients (see Table 1). It should be noted that, in some instances, it can be difficult to differentiate adverse events from symptoms of the underlying disease.

Table 1: Negative and positive schizophrenia clinical studies. Adverse events reported with an incidence of 1% or greater in the amisulpride group.

	Amisulpride (n=921) %	Placebo (n=202) %	Haloperidol (n=245) %	Flupenthixol/ risperidone (n=62) %
CNS Disorders				
Extrapyramidal disorder	11	2	33	12
Insomnia	10	7	11	7
Anxiety	7	5	9	6
Agitation	5	3	5	4
Tremor	3	6	4	7
Somnolence	3	0	4	4
Headache	3	4	3	10
Rigidity	2	2	5	5
Hypersalivation	2	0	2	4
Dyskinesia	2	0	6	0
Nervousness	2	1	2	1
Dystonia	1	0	3	1
Oculogyric crisis	1	0	1	2
Depression	1	0	2	1
Dizziness	1	1	0	3
Aggressive reaction	1	1	1	0
Suicide attempt	1	0	2	3
Gastrointestinal Disorders				
Constipation	3	1	4	1
Vomiting	2	3	2	4
Nausea	2	2	2	2
Dry mouth	1	1	2	0
Diarrhoea	1	1	1	0

	Amisulpride (n=921) %	Placebo (n=202) %	Haloperidol (n=245) %	Flupenthixol/ risperidone (n=62) %
Abdominal pain	1	1	1	3
Dyspepsia	1	0	0	0
Body as a whole				
Weight increase	6	5	2	5
Weight decrease	2	2	1	0
Sweating increased	1	1	0	0
Fatigue	1	1	1	4
Reproductive Disorders				
Amenorrhoea	4	0	0	0
Galactorrhoea	3	0	1	13
Menstrual disorder	1	0	0	2
Vaginitis	1	0	1	0
Cardiovascular Disorders				
Hypotension	1	0	1	3
Postural hypotension	1	0	0	3
Hypertension	1	0	0	2
Cutaneous Disorders				
Pruritis	1	1	0	1

Very common: greater than or equal to 10%; common: >1% to <10%; uncommon: greater than or equal to 0.1% to <1%; rare: greater than or equal to 0.01% to <0.1%; very rare: <0.01%.

Central and peripheral nervous system disorders. Tardive dyskinesia characterised by rhythmic, involuntary movements primarily of the tongue and/or face have been rarely reported, usually after long-term administration. Antiparkinsonian medication is ineffective or may induce aggravation of the symptoms.

Seizures have been reported rarely.

Cardiovascular disorders. Bradycardia has been rarely reported.

Body as a whole. General disorders. Allergic reactions have been reported rarely.

Hepatic system. Elevations of hepatic enzymes, mainly transaminases, have been very rarely reported.

Metabolism and nutrition disorders. Hyperglycaemia has been uncommonly reported (see **Precautions**).

Psychiatric disorders. Orgasmic dysfunction has been commonly reported.

Endocrine disorders. Gynaecomastia, breast pain and erectile dysfunction have been commonly reported.

Postmarketing data

Very rare cases of neuroleptic malignant syndrome have been reported (see **Precautions**).

Cases of QT interval prolongation and ventricular arrhythmias such as *torsades de pointes*, ventricular tachycardia, which may result in ventricular fibrillation or cardiac arrest, sudden death have been reported (see **Precautions**).

Dosage and Administration

For acute psychotic episodes, oral doses between 400 and 800 mg/day are recommended. In individual cases, the daily dose may be increased up to 1,200 mg/day. Doses above 1,200 mg/day have not been extensively evaluated for safety and therefore should not be used. Doses above 800 mg/day have not been shown to be superior to lower doses and may increase the incidence of adverse events. No specific titration is required when initiating the treatment with amisulpride. Doses should be adjusted according to individual response.

Doses should preferably be administered before meals.

Amisulpride should be administered bid (twice daily) for doses above 400 mg.

Chronic schizophrenic disorders

Amipride tablets are available as a 400 mg tablet only. It is recommended that Amipride is used only for patients already established on amisulpride 400 mg tablets. It should not be used for initiation of treatment with amisulpride tablets or for dosage titration as different strength tablets may be required.

Elderly

Amisulpride should be used with particular caution because of a possible risk of hypotension or sedation.

Children

Amisulpride is contraindicated in children up to puberty as its safety has not yet been established.

Renal insufficiency

Amisulpride is eliminated by the renal route. In renal insufficiency, the dose should be reduced to one-half in patients with creatinine clearance (CRCL) between 30 and 60 mL/minute and to one-third in patients with CRCL between 10 and 30 mL/minute. As there is no experience in patients with severe renal impairment (CRCL < 10 mL/minute) particular care is recommended in these patients (see **Precautions, Impaired renal function**).

Hepatic insufficiency

Since the drug is weakly metabolised, a dosage reduction should not be necessary (see **Precautions, Impaired hepatic function**).

Overdosage

In case of poisoning or overdose, advice should be sought from a Poisons Information Centre (telephone 13 11 26) or go to Accident and Emergency at the nearest hospital.

Symptoms

Experience with amisulpride in overdosage is limited. Exaggeration of the known pharmacological and adverse effects of amisulpride have been reported. These may include drowsiness, sedation, coma, hypotension and extrapyramidal symptoms.

Treatment

In cases of acute overdose, the possibility of multiple drug intake should be considered.

Since amisulpride is weakly dialysed, haemodialysis should not be used to eliminate the drug.

There is no specific antidote to amisulpride. Appropriate supportive measure should therefore be instituted: close supervision of vital functions and, because of the risk of prolongation of the QT interval, continuous cardiac monitoring until the patient recovers.

If severe extrapyramidal symptoms occur, anticholinergic agents should be administered.

Since amisulpride is weakly dialysed, haemodialysis is not recommended as the method of elimination.

Presentation and storage conditions

Each Amipride tablet contains 400 mg of amisulpride. They are a white to off-white, capsule shaped tablet with a scoreline on one side. Available in PVC/Al blister packs of 60 tablets.

Store below 25°C.

Name and address of the sponsor

Aspen Pharma Pty Ltd
34–36 Chandos Street
St Leonards NSW 2065
Australia

Poison Schedule of the medicine

S4 – Prescription Only Medicine

Date of first inclusion in the Australian Register of Therapeutic Goods (the ARTG)

1/08/2008

Date of most recent amendment

17 June 2013