

ATALINE

PRESENTATION

Each tablet contains terbutaline sulphate 2.5 mg.

INDICATIONS

For bronchodilation: Terbutaline is a selective beta₂-adrenergic agonist recommended for the relief and prevention of bronchospasm in bronchial asthma and other bronchopulmonary disorders in which bronchospasm is a complicating factor.

PHARMACOLOGY

Pharmacodynamic properties

Pharmaco-therapeutic group: selective beta₂-agonist, terbutaline, ATC code: R03C C03.

Terbutaline is a selective beta₂-adrenergic stimulant having the following pharmacological effects:-

- In the lung - bronchodilation; increased mucociliary clearance; suppression of oedema and anti-allergic effects.
- In skeletal muscle - stimulates Na⁺/K⁺ transport and also causes depression of subtetanic contractions in slow-contracting muscle.
- In uterine muscle - inhibition of uterine contractions.
- In the CNS - low penetration of the blood-brain barrier at therapeutic doses, due to the highly hydrophilic nature of the molecule.
- In the CVS - administration of terbutaline results in cardiovascular effects mediated through beta₂-receptors in the peripheral arteries and in the heart e.g. in healthy subjects, 0.25 - 0.5mg injected s.c. is associated with an increase in cardiac output (up to 85% over controls) due to an increase in heart rate and a larger stroke volume. The increase in heart rate is probably due to a combination of a reflex tachycardia via a fall in peripheral resistance and a direct positive chronotropic effect of the drug.

Pharmacokinetic properties

Basic parameters have been evaluated in man after IV and oral administration of therapeutic doses, e.g.

IV Single dose

Volume distribution (vss):	114 L
Total body clearance (cl):	213 ml/min
Mean residence time (mrt):	9.0 h
Renal clearance (clr):	149 ml/min (males)

Oral dose

Renal clearance (clr):	1.925ml/min (males)
Renal clearance (clr):	2.32ml/min (females)

The plasma concentration/time curve after IV administration is characterised by a fast distribution phase, an intermediate elimination phase and a late elimination phase. Terminal half-life (t_{1/2}) has been determined after single and multiple dosing (mean values varied between 16 - 20h).

Bioavailability

Food reduces bioavailability following oral dosing (10% on average).

Fasting values of 14 - 15% have been obtained.

Metabolism

The main metabolite after oral dosing is the sulphate conjugate and also some glucuronide conjugate can be found in the urine.

CONTRAINDICATIONS

Hypersensitivity to the active substance or to any of the excipients in ATALINE tablets.

SPECIAL WARNINGS AND PRECAUTIONS FOR USE

As for all beta₂-agonists caution should be observed in patients with thyrotoxicosis.

Cardiovascular effects may be seen with sympathomimetic drugs, including ATALINE. There is some evidence from post-marketing data and published literature of myocardial ischaemia associated with beta agonists.

Due to the positive inotropic effect of beta₂-agonists, these drugs should not be used in patients with hypertrophic cardiomyopathy.

Patients with underlying severe heart disease (e.g. ischaemic heart disease, arrhythmia or severe heart failure) who are receiving ATALINE should be warned to seek medical advice if they experience chest pain or other symptoms of worsening heart disease.

Attention should be paid to assessment of symptoms such as dyspnoea and chest pain, as they may be of either respiratory or cardiac origin.

As maternal pulmonary oedema and myocardial ischaemia have been reported during or following premature labour in patients receiving beta₂-agonists, careful attention should be given to fluid balance and cardio-respiratory function, including ECG monitoring. If signs of pulmonary oedema and myocardial ischaemia develop, discontinuation of treatment should be considered.

Due to the risk of pulmonary oedema and myocardial ischaemia that has been observed during the use of beta₂-agonists in the treatment of premature labour, before these products are given to any patient with known heart disease, an adequate assessment of the patients' cardiovascular status should be made by a physician experienced in cardiology.

Tocolysis: Serious adverse reactions including death have been reported after administration of terbutaline to women in labour. In the mother, these include increased heart rate, transient hyperglycemia, hypokalaemia, cardiac arrhythmias, pulmonary oedema and myocardial ischaemia. Increased fetal heart rate and neonatal hypoglycaemia may occur as a result of maternal administration.

Due to the hyperglycemic effects of beta₂-agonists, additional blood glucose controls are recommended initially in diabetic patients.

Potentially serious hypokalaemia may result from beta₂-agonist therapy. Particular caution is recommended in acute severe asthma as the associated risk may be augmented by hypoxia. The hypokalaemic effect may be potentiated by concomitant treatments (see section 4.5). It is recommended that serum potassium levels are monitored in such situations.

Patients with persistent asthma who require maintenance therapy with beta₂-agonists should also receive optimal anti-inflammatory therapy e.g. inhaled corticosteroids, leukotriene receptor antagonists. These patients must be advised to continue taking their anti-inflammatory therapy after the introduction of terbutaline even when symptoms decrease. Should symptoms persist, or if treatment with beta₂-agonists needs to be increased, this indicates a worsening of the underlying condition and warrants a reassessment of the therapy.

Consideration should be given to the requirements for additional therapy (including increased dosages of anti-inflammatory medication). Severe exacerbations of asthma should be treated as an emergency in the usual manner.

ATALINE contains lactose monohydrate. Patients with rare hereditary problems of galactose intolerance, Lapp lactase deficiency or glucose-galactose malabsorption should not take this medicine.

Effects on ability to drive and use machines

ATALINE has no or negligible influence on the ability to drive and use machines.

POSODOLOGY AND METHOD OF ADMINISTRATION

Posology

When used as maintenance therapy the patient should also receive optimal anti-inflammatory therapy, e.g. inhaled corticosteroids, leukotriene receptor antagonists.

Terbutaline has a duration of action of 7 to 8 hours. The minimum recommended dosage interval is therefore 7 hours.

Adults: During the first 1 – 2 weeks, 2.5 mg 3 times in a 24-hours period is recommended. The dose may then, if necessary, be increased to 5mg 3 times in a 24 hour period to achieve adequate bronchodilation.

Elderly: dosage as for adults

Paediatric population:

Children: (7 – 15 years): The starting dose should normally be 2.5 mg 2 times in 24 hours. However, in some patients, the dose may need to be increased to 2.5 mg 3 times in 24 hours.

Method of administration

For oral use.

The tablet should be swallowed whole with a little fluid on an empty stomach.

INTERACTIONS WITH OTHER MEDICINAL PRODUCTS AND OTHER FORMS OF INTERACTION

Beta-blocking agents (including eye drops), especially the non-selective ones, such as propranolol, may partially or totally inhibit the effect of beta-stimulants.

Therefore, terbutaline preparations and non-selective beta-blockers should not normally be administered concurrently. ATALINE should be used with caution in patients receiving other sympathomimetics.

Halogenated anaesthetics

Halothane anaesthesia should be avoided during beta₂-agonists treatment, since it increases the risk of cardiac arrhythmias. Other halogenated anaesthetics should be used cautiously together with beta₂-agonists.

Potassium depleting agents and hypokalaemia

Owing to the hypokalaemic effect of beta-agonists, concurrent administration with terbutaline of serum potassium depleting agents known to exacerbate the risk of hypokalaemia, such as diuretics, methyl xanthines and corticosteroids, should be administered cautiously after careful evaluation of the benefits and risks with special regard to the increased risk of cardiac arrhythmias arising as a result of hypokalaemia. Hypokalaemia also predisposes to digoxin toxicity.

FERTILITY, PREGNANCY AND LACTATION

Pregnancy

Although no teratogenic effects have been observed in animals or in patients, terbutaline should only be administered with caution during the first trimester of pregnancy.

Maintenance treatment with oral beta₂-agonists for asthma and other pulmonary diseases should be used with caution at the end of pregnancy because of the potential tocolytic effect.

Breast-feeding

Terbutaline is secreted into breast milk, but any effect on the infant is unlikely at therapeutic doses.

Transient hypoglycaemia has been reported in newborn preterm infants after maternal beta₂-agonist treatment.

UNDESIRABLE EFFECTS

Summary of safety profile

The intensity of the adverse reactions depends on dosage and route of administration. Most of the adverse reactions are characteristic of sympathomimetic amines. The majority of these effects have reversed spontaneously within the first 1-2 weeks of treatment.

The frequency of side-effects is low at the recommended doses.

Tabulated list of adverse reactions

System Organ Class (SOC)	Frequency Classification	Adverse Drug Reaction Preferred Term
Immune System Disorders	Not Known ^	Hypersensitivity reactions including angioedema, bronchospasm, hypotension and collapse
Metabolism and Nutrition Disorders	Common	Hypokalaemia (see section 4.4)
Psychiatric Disorders	Not Known ^	Sleep disorder and Behavioural disturbances, such as agitation and restlessness
Nervous System Disorders	Very Common	Tremor Headache
Cardiac Disorders	Common	Tachycardia Palpitations
	Not Known ^	Arrhythmias, e.g. atrial fibrillation, supraventricular tachycardia and extrasystoles Myocardial ischaemia (see section 4.4)
Vascular Disorders	Not Known ^	Peripheral vasodilation
Respiratory, Thoracic and Mediastinal Disorders	Not Known ^	Paradoxical bronchospasm*

Gastrointestinal Disorders	Not Known ^	Nausea Mouth and throat irritation
Skin and Subcutaneous Tissue Disorders	Not Known ^	Urticaria Rash
Musculoskeletal and Connective Tissue Disorders #	Common	Muscle spasm

A few patients feel tense; this is also due to the effects on skeletal muscle and not to direct CNS stimulation.
^ Reported spontaneously in post-marketing data and therefore frequency regarded as unknown
* In rare cases, through unspecified mechanisms, paradoxical bronchospasm may occur, with wheezing immediately after inhalation. This should be immediately treated with a rapid-onset bronchodilator. Terbutaline therapy should be discontinued and after assessment, an alternative therapy initiated.

OVERDOSE

Possible symptoms and signs:

Headache, anxiety, tremor, nausea, tonic cramp, palpitations, tachycardia, arrhythmia. A fall in blood pressure sometimes occurs.

Laboratory findings: hypokalaemia, hyperglycaemia and lactic acidosis sometimes occur.

Management:

Mild and Moderate Cases: Reduce the dose.

Severe cases: gastric lavage; administration of activated charcoal. Determination of the acid – base balance, blood sugar and electrolytes, particularly serum potassium levels. Monitoring of the heart rate and rhythm and blood pressure. Metabolic changes should be corrected. A cardio-selective β – blocker (e.g. metoprolol) is recommended for the treatment of arrhythmias causing a hemodynamic deterioration. The β --blocker should be used with care because of the possibility of inducing bronchoconstriction. If the β 2-mediated reduction in peripheral vascular resistance significantly contributes to the fall in blood pressure, a volume expander should be given.

PHARMACEUTICAL PARTICULARS

List of excipients

Lactose monohydrate,
Microcrystalline cellulose,
Croscarmellose sodium,
Colloidal silica dioxide,
Quinoline yellow lake (104),
Magnesium stearate.

Special precautions for storage

Store below 30°C, in the original package

Shelf life

36 months

Nature and contents of container

PVC- Al blisters packed in cartons with 20, 60, 100 tablets and hospital packs of 500 and 1000 tablets.
Not all pack sizes may be marketed.

MANUFACTURER

MEDOCHEMIE LTD, 1-10 Constantinoupoleos Street, 3011 Limassol, Cyprus

PRODUCT REGISTRATION HOLDER

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