PRODUCT MONOGRAPH

PrVENTOLIN® I.M. injection

salbutamol sulphate for injection

500 mcg/mL

PrVENTOLIN® I.V. infusion solution

salbutamol sulphate for injection

1000 mcg/mL

BP

Bronchodilator

(beta$_2$-adrenergic stimulant)

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L5N 6L4

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PART I: HEALTH PROFESSIONAL INFORMATION

SUMMARY PRODUCT INFORMATION

Route of Administration	Dosage Form / Strength	Clinically Relevant Nonmedicinal Ingredients
Intramuscular (I.M.) or Intravenous (I.V.)	I.M. Injection / salbutamol 500 mcg/mL or salbutamol I.V. Infusion / 1000 mcg/mL	Not Applicable

For a complete listing see Dosage Forms, Composition and Packaging section.

INDICATIONS AND CLINICAL USE

VENTOLIN® (salbutamol sulphate) injections are indicated for:

- the relief of severe bronchospasm associated with acute exacerbations of chronic bronchitis and bronchial asthma,
- the treatment of status asthmaticus.

In many patients, VENTOLIN® injections will be no more effective, and likely less well tolerated, than VENTOLIN® HFA inhalation aerosol or VENTOLIN® respirator solution. However, patients who are severely ill with airway inflammation and mucus plugging may respond well to parenteral salbutamol after failing to benefit from the inhaled drug.

This product should be administered under the supervision of a qualified health professional who is experienced in the use of parenteral preparations and in the management of asthma. Appropriate management of therapy and complications is only possible when adequate diagnostic and treatment facilities are readily available.

CONTRAINDICATIONS

- Patients who are hypersensitive to this drug or to any ingredient in the formulation or component of the container.
- Patients with cardiac tachyarrhythmias
- Patients at risk of threatened abortion during the first or second trimester.

WARNINGS AND PRECAUTIONS

General

VENTOLIN® I.V. infusion solution may be diluted with Water for Injection BP, Sodium Chloride Injection BP, Dextrose Injection BP, or Sodium Chloride and Dextrose Injection BP (see DOSAGE AND ADMINISTRATION). These are the only recommended diluents. Dextrose-containing solutions may not be suitable for patients with diabetes mellitus, due to the possible danger of glucose overload.

The use of VENTOLIN® injections in the treatment of severe bronchospasm or status asthmaticus does not obviate the requirement for glucocorticoid steroid therapy as appropriate. When practicable, administration of oxygen, concurrently with VENTOLIN® injections is recommended, particularly when salbutamol is given by intravenous infusion to hypoxic patients.

Cardiovascular

In individual patients, any $beta_2$-adrenergic agonist, including salbutamol, may have a clinically significant cardiac effect. Care should be taken with patients suffering from cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmias and hypertension. Special care and supervision are required in patients with idiopathic hypertrophic subvalvular aortic stenosis, in whom an increase in the pressure gradient between the left ventricle and the aorta may occur, causing increased strain on the left ventricle.

Fatalities have been reported following excessive use of inhaled sympathomimetic drugs in patients with asthma. The exact cause of death is unknown, but cardiac arrest following an unexpected development of a severe acute asthmatic crisis and subsequent hypoxia is suspected.

Endocrine and Metabolism

Metabolic Effects

In common with other beta-adrenergic agents, salbutamol can induce reversible metabolic changes, such as potentially serious hypokalemia, particularly following nebulised or especially infused administration. Particular caution is advised in acute severe asthma since hypokalemia may be potentiated by concomitant treatment with xanthine derivatives, steroids and diuretics, and by hypoxia. Hypokalemia will increase the susceptibility of digitalis-treated patients to cardiac arrythmias. It is recommended that serum potassium levels be monitored in such situations.

Large doses of intravenous salbutamol have been reported to aggravate pre-existing diabetes mellitus. The diabetic patient may be unable to compensate for the increased blood glucose levels and the development of ketoacidosis has been reported. Concurrent administration of corticosteroids can exaggerate this effect. Diabetic patients and those concurrently receiving corticosteroids should be monitored frequently during intravenous infusion of VENTOLIN® I.V. infusion solution so that remedial steps (e.g. an increase in insulin dosage) can be taken to counter any metabolic change that is occurring. For these patients, VENTOLIN® I.V. infusion solution should be diluted with Sodium Chloride Injection BP, rather than Sodium Chloride and Dextrose Injection BP. The relevance of these observations to the use of VENTOLIN® injections is unknown.

Lactic acidosis has been reported very rarely in association with high therapeutic doses of intravenous and nebulised short-acting beta-agonist therapy, mainly in patients being treated for an acute asthma exacerbation (see Adverse Reaction section). Increase in lactate levels may lead to dyspnea and compensatory hyperventilation, which could be misinterpreted as a sign of asthma treatment failure and lead to inappropriate intensification of short-acting beta-agonist treatment. It is therefore recommended that patients are monitored for the development of elevated serum lactate and consequent metabolic acidosis in this setting.

Care should be taken with patients with hyperthyroidism.

Hypersensitivity
Immediate hypersensitivity reactions may occur after administration of salbutamol, as demonstrated by rare cases of urticaria, angioedema, rash, bronchospasm, hypotension, anaphylaxis and oropharyngeal edema.

Care should be taken in patients who are unusually responsive to sympathomimetic amines.

Neurologic
Care should be taken with patients with convulsive disorders.

Respiratory
Some patients have been reported to have developed severe paradoxical bronchospasm with repeated excessive use of sympathomimetic inhalation preparations. In this event, the use of the preparation should be discontinued immediately and alternate therapy instituted, since in the reported cases the patients did not respond to other forms of therapy until the drug was withdrawn.

Special Populations
Pregnant Women
Salbutamol, in common with other betamimetics, is not approved to stop or prevent premature labour.

Due to the risk of pulmonary edema and myocardial ischaemia that has been observed during the use of betamimetics in the treatment of premature labour, before VENTOLIN® injections are given to any patient with known heart disease, an adequate assessment of the patient's cardiovascular status should be made by a physician experienced in cardiology.

There are no adequate and well-controlled studies in pregnant women and there is little published evidence of its safety in the early stages of human pregnancy. Administration of any drug to pregnant women should only be considered if the anticipated benefits to the expectant woman are greater than any possible risks to the foetus.

During worldwide marketing experience, rare cases of various congenital anomalies including cleft palate and limb defects have been reported in the offspring of patients being treated with salbutamol. Some of the mothers were taking multiple medications during their pregnancies. Because no consistent pattern of defects can be discerned, and baseline rate for congenital anomalies is 2-3%, a relationship with salbutamol use cannot be established.

Labour and Delivery:
It has been reported that high doses of salbutamol, administered intravenously, inhibit uterine contractions.

Therefore, cautious use of VENTOLIN® injections is required in pregnant patients when it is given for relief of bronchospasm so as to avoid interference with uterine contractibility. During I.V. infusion of salbutamol, the maternal pulse rate should be monitored and not normally allowed to exceed a steady rate of 140 beats per minute.

As maternal pulmonary edema and myocardial ischaemia have been reported during or following premature labour in patients receiving $beta_2$-agonists, careful attention should be given to fluid balance and cardio-respiratory function, including ECG, should be monitored. If signs of pulmonary edema or myocardial ischaemia develop, discontinuation of treatment should be considered (see Adverse Reactions).

Nursing Women:
As salbutamol is probably secreted in breast milk and because of the potential for tumorigenicity of salbutamol shown in some animal studies, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother. It is not known whether salbutamol has a harmful effect on the neonate.

Pediatrics:
The dosage of VENTOLIN® injections in the pediatric age group has not been established. At present there are insufficient data to recommend a dosage regimen for use in children.

MONITORING AND LABORATORY TESTS

In accordance with the present practice for asthma treatment, patient response should be monitored clinically and by lung function tests.

Electrocardiogram, and serum potassium and glucose should be monitored during continuous infusions of salbutamol.

Monitoring and Control of Asthma

Failure to respond to a previously effective dose of salbutamol indicates a deterioration of the condition and the physician should be contacted promptly.

In worsening asthma it is inadequate to increase $beta_2$-agonist use only, especially over an extended period of time. Instead, a reassessment of the patient's therapy plan is required and concomitant anti inflammatory therapy should be considered. Sudden or progressive deterioration in asthma control is potentially life threatening; the treatment plan must be re-evaluated, and consideration be given to corticosteroid therapy.

ADVERSE REACTIONS

Adverse Drug Reaction Overview

Intramuscular injection of the undiluted preparation may produce slight local pain or stinging.

Fine muscle tremor is a common side effect of VENTOLIN® injections. This is due to direct $beta_2$-stimulation by salbutamol of skeletal muscle. There have been very rare reports of transient muscle cramps.

A dose-dependent increase in heart rate, secondary to a reduction in peripheral resistance, due to vasodilation, may occur with parenteral salbutamol, and may cause palpitations. This is most likely to occur in patients with normal heart rates. In patients with pre-existing sinus tachycardia, especially those in status asthmaticus, the heart rate tends to fall as the condition of the patient improves. Cardiac arrhythmias (including atrial fibrillation, supraventricular tachycardia and extrasystoles) have been reported, usually in susceptible patients.

In the management of pre-term labour, salbutamol injection/solution for infusion have uncommonly been associated with pulmonary edema and myocardial ischaemia. Patients with predisposing factors including multiple pregnancies, fluid overload, maternal infection and pre-eclampsia may have an increased risk of developing pulmonary edema.

Paradoxical bronchospasm has been reported to occur following salbutamol inhalation therapy, requiring the immediate discontinuation of the drug and the institution of alternative forms of therapy.

As with other $beta_2$-agonists, hyperactivity has been reported rarely in children.

Potentially serious hypokalemia may result from beta$_2$-agonist therapy, mainly from parenteral and nebulised administration.

Other side effects which may occur with salbutamol are sweating, headache, dizziness, flushing, nausea, vomiting, muscle cramps, insomnia, drowsiness, restlessness, irritability, chest discomfort, difficulty in micturition, hypertension, angina, vertigo, central nervous system stimulation, unusual taste and drying or irritation of the oropharynx.

Immediate hypersensitivity reactions including angioedema, urticaria, bronchospasm, hypotension, rash, oropharyngeal oedema, anaphylaxis and collapse have been reported very rarely.

Lactic acidosis has also been reported very rarely in patients receiving intravenous salbutamol therapy for the treatment of acute asthma exacerbation.

DRUG INTERACTIONS

Drug-Drug Interactions

Table 1: Established or Potential Drug-Drug Interactions

salbutamol sulphate	Ref	Effect	Clinical comment
Monoamine oxidase inhibitors or tricyclic antideprssants.	CS	May potentiate action of salbutamol on cardiovascular system.	Salbutamol should be administered with extreme caution to patients being treated with monoamine oxidase inhibitors or tricyclic antidepressants.
Other sympathomimetic bronchodilators or epinephrine.	CS	May lead to deleterious cardiovascular effects.	Other sympathomimetic bronchodilators or epinephrine should not be used concomitantly with salbutamol. If additional adrenergic drugs are to be administered by any route to the patient using salbutamol, the adrenergic drugs should be used with caution to avoid deleterious cardiovascular effects. Such concomitant use must be individualised and not given on a routine basis. If regular co-administration is required then alternative therapy must be considered.
Beta-blockers	CS	May effectively antagonise the action of salbutamol.	Beta-adrenergic blocking drugs, especially the non-cardioselective ones, such as propranolol, should not usually be prescribed together.

Diuretics	CS	May lead to ECG changes and/or hypokalemia, although the clinical significance of these effects is not known.	The ECG changes and/or hypokalemia that may result from the administration of non-potassium sparing diuretics (such as loop or thiazide diuretics) can be acutely worsened by beta-agonists, especially when the recommended dose of the beta-agonist is exceeded. Caution is advised in the co-administration of beta-agonists with non-potassium sparing diuretics.
Digoxin	CS	May lead to mean decrease in serum digoxin levels. The clinical significance of these findings for patients with obstructive airways disease who are receiving salbutamol and digoxin on a chronic basis is unclear.	Mean decreases of 16-22% in serum digoxin levels were demonstrated after single doses intravenous and oral administration of salbutamol, respectively, to normal volunteers who had received digoxin for 10 days. It would be prudent to carefully evaluate serum digoxin levels in patients who are currently receiving digoxin and salbutamol.

Legend CS = Class Statement

DOSAGE AND ADMINISTRATION

Recommended Dose and Dosage Adjustment

Adults

In severe bronchospasm and status asthmaticus

Intramuscular injection

500 micrograms (8 micrograms/kg body weight) every 4 hours as required. Maximum daily dose: 2000 micrograms.

Continuous intravenous infusion

5 micrograms/min., increased to 10 micrograms/min., and 20 micrograms/min. at 15 - 30 minute intervals, if necessary. A suitable solution for infusion may be prepared by diluting 5 mL of VENTOLIN® I.V. infusion solution (1.0 mg/mL) in 500 mL of a chosen i.v. solution to provide a salbutamol concentration of 10 micrograms/mL.

VENTOLIN® I.V. INFUSION SOLUTION MUST NOT BE INJECTED UNDILUTED. THE CONCENTRATION SHOULD BE REDUCED 50% BEFORE ADMINISTRATION. VENTOLIN® injections are compatible in PVC bags and in glass bottles with Water for Injection BP, Sodium Chloride Injection BP, Dextrose Injection BP, and Sodium Chloride and Dextrose Injection BP. Dextrose-containing solutions may not be suitable for patients with diabetes mellitus due to the possible danger of glucose overload (see WARNINGS AND PRECAUTIONS).

Children

The dosage of VENTOLIN® injections in the pediatric age group has not been established. At present, there are insufficient data to recommend a dosage regimen for children.

Administration
VENTOLIN® injections are not to be administered in the same syringe or infusion as any other medication.

Continuous intravenous infusion, when practicable, is the preferred method of administration. Intramuscular injection may be employed when venipuncture is undesirable, inconvenient, or impossible.

Reconstituted Solutions
VENTOLIN® injections may be diluted with Water for Injection BP, Sodium Chloride Injection BP, Sodium Chloride and Dextrose Injection BP or Dextrose Injection BP. These are the only recommended diluents.

As with all parenteral drug products, intravenous admixtures should be inspected visually for clarity, particulate matter, precipitate, discoloration and leakage prior to administration, whenever solution and container permit.
All unused admixtures of VENTOLIN® injections with infusion fluids should be discarded 24 hours after preparation.

OVERDOSAGE

Overdosage may cause tachycardia, cardiac arrhythmia, hypokalemia, hypertension and in extreme cases, sudden death. To antagonize the effect of salbutamol, the judicious use of a cardioselective beta-adrenergic blocking agent (e.g. metoprolol, atenolol) may be considered, bearing in mind the danger of inducing an asthmatic attack. Serum potassium levels should be monitored.

ACTION AND CLINICAL PHARMACOLOGY

Mechanism of Action
Salbutamol produces bronchodilation through stimulation of $beta_2$-adrenergic receptors in bronchial smooth muscle, thereby causing relaxation of bronchial muscle fibers. This action is manifested by an improvement in pulmonary function as demonstrated by spirometric measurements.

STORAGE AND STABILITY

VENTOLIN® injections should be protected from light and stored at controlled room temperature (15 - 30°C).

DOSAGE FORMS, COMPOSITION AND PACKAGING

VENTOLIN® I.M. injection 0.5 mg in 1 mL (500 micrograms/mL) is presented as ampoules of 1 mL each containing 0.5 mg salbutamol as salbutamol sulphate, in a sterile isotonic solution adjusted to pH 3.5 with sulphuric acid and/or sodium hydroxide.

VENTOLIN® I.V. infusion solution 5 mg in 5 mL (1000 micrograms/mL) is presented as ampoules of 5 mL each containing 5 mg salbutamol as salbutamol sulphate, in a sterile isotonic solution adjusted to pH 3.5 with sulphuric acid and/or sodium hydroxide.

The ampoules are of clear, neutral glass. The solution is clear, colourless to pale straw coloured.

PART II: SCIENTIFIC INFORMATION

PHARMACEUTICAL INFORMATION

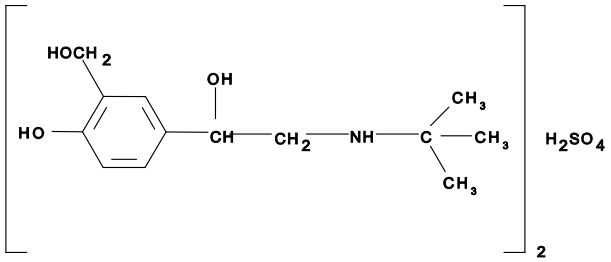
Drug Substance

Proper name: salbutamol sulphate

Chemical name: α^1-[(*tert*-butylamino)methyl]-4-hydroxy-*m*-xylene-α, α'-diol sulphate (2:1) (salt)

Molecular formula and molecular mass: $[C_{13}H_{21}NO_3]_2 \bullet H_2SO_4$ 576.71

Structural formula:



Physicochemical properties:

Description: White or almost white powder. It is odourless or almost odourless.

Solubility: Salbutamol sulphate is soluble in 4 parts of water; slightly soluble in ethanol (96%), in chloroform and in ether.

pH value: A 5% solution of salbutamol sulphate in distilled water has a pH value of 4.3

pKa values: Salbutamol has pKa values of 9.3 and 10.3.

Melting Point: Salbutamol melts at approximately 155°C, with decomposition.

VENTOLIN I.M. injection: Salbutamol (500 mcg/mL as salbutamol sulphate); Sodium chloride (8.9 mg/mL); Sulphuric acid (5% v/v) and/or sodium hydroxide, for pH adjustment; Water for Injection.

VENTOLIN I.V. infusion solution: Salbutamol (1000 mcg/mL as salbutamol sulphate); Sodium chloride (8.8 mg/mL); Sulphuric acid (5% v/v) and/or sodium hydroxide, for pH adjustment; Water for Injection.

DETAILED PHARMACOLOGY

Animal

Salbutamol exerts a relatively selective action on the $beta_2$-adrenergic receptors of the bronchial and vascular smooth muscles. In anesthetized guinea pigs, salbutamol completely prevents acetylcholine-induced bronchospasm at the dose of 100 mcg/kg intravenously.

In anesthetized dogs, salbutamol is one-fifth as potent as isoprenaline in skeletal muscle vasodilation.

In the isolated atrium preparation of guinea pigs, salbutamol was 500 and 2500 times less potent than isoprenaline in increasing the rate and force of contraction, respectively.

Administration of salbutamol aerosol at the dose of 250 mcg/mL for one minute to guinea pigs, prevented acetylocholine-induced bronchospasm without any effect on the heart rate.

In anesthetized cats and dogs, salbutamol prevented the bronchospasm elicited by vagal stimulation, without any significant effect on heart rate and blood pressure. Comparative tests of salbutamol and isoprenaline in isolated dog papillary muscle, guinea pig atrial muscle and human heart muscle, have shown that the effect of salbutamol on beta-adrenergic receptors in the heart is minimal.

In 6 dogs with right-sided cardiac bypass, salbutamol, given at the dose of 25 mcg/mL, improved left ventricular efficiency and increased coronary blood flow.

Recent studies in laboratory animals (minipigs, rodents and dogs) recorded the occurrence of cardiac arrhythmias and sudden deaths (with histologic evidence of myocardial necrosis) when beta-agonists and methylxanthines were administered concurrently. The significance of these findings when applied to humans is currently unknown.

Human

Intravenous salbutamol had approximately one-tenth the positive chronotropic potency of intravenous isoprenaline.

Salbutamol and isoprenaline were equipotent bronchodilators when given intravenously. However, 7 times the infusion rate of salbutamol was necessary to increase the heart rate by the same amount as with isoprenaline.

Intravenous salbutamol increased ventilatory response to inhaled CO_2 in both hypoxia and hyperoxia. There was an increase in heart rate which was most pronounced when hypoxia was combined with hypercapnia. Plasma potassium was decreased in association with an increase in plasma glucose and serum insulin.

Intravenous salbutamol raised the blood levels of insulin, non-esterified fatty acids, glucose, lactate and ketone bodies. Serum potassium, bicarbonate, phosphate, calcium, magnesium and corticosteroids were lowered.

Aminophylline potentiated the metabolic effects of salbutamol when the two drugs were infused in combination.

It was found in asthmatic patients that salbutamol, administered orally, by aerosol, or intravenously, was metabolized to its 4' -O-sulphate ester. Both free salbutamol and the metabolite were excreted in the urine, the ratio of the two varying with the route of administration and suggesting that metabolism occurred in the gut and/or the liver. Pharmacological testing showed that the metabolite had negligible beta-adrenoceptor stimulant and no blocking activity.

TOXICOLOGY

Acute Toxicity

Intravenous LD_{50}	
Mouse (10)	72 mg/kg
Mouse (10)	60 mg/kg

Oral LD_{50}	
Mouse (10)	> 2000 mg/kg
Rat (10)	> 2000 mg/kg

Intraperitoneal LD_{50} in Rat	
Newborn (155)	216 mg/kg
Weanling (100)	524 mg/kg
Six-Weeks Old (90)	437 mg/kg

(Number of animals in brackets)

The rate of respiration in test animals initially increased, but subsequently became abnormally slow and deep. Death, preceded by convulsions and cyanosis, usually occurred within four hours after administration.

Rabbits, cats and dogs survived a single oral dose of 50 mg/kg salbutamol.

Intermediate (Four Months) Toxicity

Rat

Salbutamol was given orally from 0.5 mg/kg up to 25 mg/kg daily on an increasing scale. There were no significant hematological changes except a small increase in hemoglobin and packed cell volumes. BUN and SGOT values were elevated while blood glucose and plasma protein levels remained unchanged. Pituitaries had an increased amount of PAS-positive material in the cleft at higher dose levels.

Dog

Salbutamol was given orally from 0.05 mg/kg up to 12.5 mg/kg daily on an increasing scale. Hemoglobin and packed cell volumes were slightly decreased, particularly at higher doses. Leukocyte count decreased after 16 weeks of treatment at each dose level. Platelet count was increased after eight weeks at the highest dose. No significant effects were seen on biochemical values. The only significant histological change was the appearance of corpora amylacea in the stomach, attributed to altered mucus secretion. Inhalation of 1000 mcg of salbutamol aerosol for 3 months did not produce any morphological changes in lungs, trachea, lymph nodes, liver or heart. Inhalation of salbutamol dry powder for 30 days in average daily doses of up to 144 mg/day resulted in the expected pharmacological effects but no apparent compromise of good health. All animals survived the study and examination of organs and tissues revealed no significant changes.

Long-Term Toxicity

Chronic toxicity studies were carried out in 2 separate centres. Fifty female, Charles River CD Albino rats received salbutamol orally at 2, 10 and 50 mg/kg/day for 104 weeks; fifty female Charles River CD Sprague-Dawley derived rats received orally 20 mg/kg/day for 50 weeks, and 50 female Charles River Long-Evans rats received orally, 20 mg/kg/day for 96 weeks. These studies demonstrated a dose-related incidence of mesovarian leiomyomas. No similar tumors were seen in mice.

Mutagenicity

In vitro tests involving four micro-organisms revealed no mutagenic activity.

Carcinogenicity

In a two-year study in the rat, salbutamol sulphate caused a significant dose-related increase in the incidence of benign leiomyomas of the mesovarium at doses corresponding to 111, 555, and 2,800 times the maximum human inhalation dose. In another study, the effect was blocked by the co-administraton of propranolol. The relevance of these findings to humans is not known. An 18-month study in mice and a lifetime study in hamsters revealed no evidence of tumorigenicity.

Teratogenicity Studies

Mouse

Salbutamol has been shown to be teratogenic in mice when given in doses corresponding to 14 times the human aerosol dose; when given subcutaneusly in doses corresponding to 0.2 times the maximum human (child weighing 21 kg) oral dose; and when given subcutaneously in doses corresponding to 0.4 times the maximum human oral dose.

A reproduction study in CD-1 mice given salbutamol at doses of 0.025, 0.25, and 2.5 mg/kg subcutaneously, corresponding to 1.4, 14 and 140 times the maximum human aerosol dose respectively, showed cleft palate formation in 5 of 111 (4.5%) foetuses at 0.25 mg/kg and in 10 of 108 (9.3%) foetuses at 2.5 mg/kg. No cleft palates were observed at a dose of 0.025 mg/kg salbutamol. Cleft palates occurred in 22 of 72 (30.5%) foetuses treated with 2.5 mg/kg isoprenaline (positive control).

Rat

No adverse effect was seen when salbutamol was given orally at 0.5, 2.32, 10.75 and 50 mg/kg/day throughout pregnancy. When given to 2 consecutive generations at doses up to 50 mg/kg/day, no adverse effect was observed on the reproductive function of either male or female rats. The only toxic effect was an increase in neonatal mortality in the highest dose level group.

Rabbit

Given orally at 0.5, 2.32, and 10.75 mg/kg/day doses, throughout pregnancy, salbutamol had no adverse effect. A reproduction study in Stride Dutch rabbits revealed cranioschisis in 7 of 19 (37%) fetuses at 50 mg/kg, corresponding to 78 times the maximum human oral dose of salbutamol. At the dose of 50 mg/kg/day, it inhibited the weight gain of the does.

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PART III: CONSUMER INFORMATION

PrVENTOLIN® I.M. injection
salbutamol sulphate for injection

This leaflet is part III of a three-part "Product Monograph" for VENTOLIN® I.M. injection and is designed specifically for Consumers. This leaflet is a summary and will not tell you everything about VENTOLIN® I.M. injection. Contact your doctor or pharmacist if you have any questions about the drug. Only a doctor can prescribe it for you.

ABOUT THIS MEDICATION

What the medication is used for:
Your doctor has prescribed a medicine called VENTOLIN® I.M. injection for you. It is used to help breathing problems in:
- Asthma
- Other chest illnesses.

VENTOLIN® I.M. injection must only be administered by a health professional. It may be injected into muscle tissue or into a vein. **Do not try to use VENTOLIN® I.M. injection on your own.**

What it does:
Salbutamol is one of a group of medicines called bronchodilators. Salbutamol relaxes the muscles in the walls of the small air passages in the lungs. This helps to open up the airways and so helps to relieve chest tightness, wheezing and cough so that you can breathe more easily.

When it should not be used:
Do not use VENTOLIN® I.M. injection if:
- you are allergic to it or any of the components of its formulation (see what the important nonmedicinical ingredients are)
- your heart beats faster than normal
- you are at risk of miscarriage

What the medicinal ingredient is:
VENTOLIN® I.M. injection contains the active ingredient, salbutamol sulphate.

What the important nonmedicinal ingredients are:
VENTOLIN® I.M. injection contains sodium chloride, sulphuric acid and/or sodium hydroxide and water.

What dosage forms it comes in:
VENTOLIN® I.M. injection comes in ampules of 1 mL each containing 0.5 mg of Salbutamol as Salbutamol Sulphate.

WARNINGS AND PRECAUTIONS

Before you use VENTOLIN® I.M. injection, talk to your doctor or pharmacist if:
- you have ever had to stop taking other medications for this illness because you were allergic to them or they caused problems.
- you are having treatment for a thyroid condition.
- you are having treatment for high blood pressure or a heart problem.
- if you have diabetes.
- if you have a past history of seizures.
- if you are pregnant or breastfeeding.

Rare cases of lactic acidosis (too much lactic acid in the blood) have been reported in patients receiving high doses of VENTOLIN® I.M. injection. If you suffer symptoms (see Serious Side Effects Table), contact your doctor immediately.

If you notice that your shortness of breath or wheeze is becoming worse, tell your doctor as soon as possible. If the relief of wheezing or chest tightness is not as good as usual, tell your doctor as soon as possible. It may be that your chest condition is worsening and you may need to add another type of medicine to your treatment.

Your doctor may decide not to prescribe this medicine during the first three months of pregnancy, or if you are breast feeding a baby. However, there may be circumstances when your doctor advises you differently.

Labour and delivery

It has been reported that high doses of VENTOLIN® (salbutamol) injection can slow down labour (uterine contractions), **but VENTOLIN® is not approved for the treatment of premature labour in Canada**. Due to the risk of heart and circulation side effects (see Side Effects And What To Do About Them) and so as to avoid interference with uterine contractions, VENTOLIN® injection should be used with caution if given to pregnant patients with breathing problems during labour.

INTERACTIONS WITH THIS MEDICATION

Make sure that your doctor knows what other medicines you are taking (such as those for depression, allergies, other airway-opening medications (e.g. other asthma medications), blood pressure and heart medications, and water pills (diuretics), etc.), including those you can buy without a prescription as well as herbal and alternative medicines.

PROPER USE OF THIS MEDICATION

VENTOLIN® I.M. injection should not be self administered by an individual. It should be administered under the supervision of a health professional.

Usual dose:
500 micrograms (8 micrograms/kg body weight) every 4 hours as required.
Maximum daily dose: 2000 micrograms

SIDE EFFECTS AND WHAT TO DO ABOUT THEM

Very occasionally, some people feel a little shaky or have a headache or notice that their heart is beating a little faster and/or more forcefully than usual after using VENTOLIN®. Muscle cramps can occur, although these are quite rare. These effects usually wear off within a few hours, but you should tell your doctor as soon as possible. If you have chest pain, if your heart beat feels irregular, or feel unwell in any other way or have any symptoms that you do not understand, you should contact your doctor immediately.

Tell your doctor at once if you develop breathlessness, wheezing, chest pain or cough as these may be signs of increased fluid in the lungs (pulmonary edema). Chest pain may also be a sign of reduced blood supply to the heart muscle (myocardial ischaemia).

This is not a complete list of side effects. If you have any unexpected effects after receiving VENTOLIN® I.M. injection, contact your doctor or pharmacist.

SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM

Symptom/effect		Talk with your doctor or pharmacist		Stop taking drug and call your doctor or pharmacist*
		Only if severe	In all cases	
Very Rare	Increased wheezing or tightness in the chest or difficulty in breathing (sign of bronchospasm).			✓
	Allergic reactions (Hypersensitivity) Swelling of the eyelids, face, lips, tongue or throat, accompanied by difficulty in breathing, speaking or swallowing (signs of angioedema). Skin rash, skin eruption or other effect on the skin or eyes, itching or fever. Fainting when the blood pressure is too low (sign of hypotension).			✓
	Deep and rapid breathing, vomiting, abdominal pain, weight loss, fatigue, malaise (sign of lactic acidosis-too much lactic acid in the blood)			✓

***** If you think you have these side effects, it is important that you seek medical advice from your doctor immediately.

HOW TO STORE IT

Keep VENTOLIN® I.M. injection away from light and store between 15°C and 30°C.

REPORTING SUSPECTED SIDE EFFECTS

To monitor drug safety, Health Canada collects information on serious and unexpected effects of drugs . If you suspect you have had a serious or unexpected reaction to this drug you may notify Health Canada by:

toll-free telephone: 866-234-2345
toll-free fax 866-678-6789
By email: cadrmp@hc-sc.gc.ca

By regular mail:
National AR Centre
Marketed Health Products Safety and Effectiveness Information Division
Marketed Health Products Directorate
Tunney's Pasture, AL 0701C
Ottawa ON K1A 0K9

NOTE: Before contacting Health Canada, you should contact your physician or pharmacist.

MORE INFORMATION

You may need to read this leaflet again. **PLEASE DO NOT THROW IT AWAY** until you have finished your medicine.

This document plus the full product monograph, prepared for health professionals can be obtained by contacting the sponsor,
GlaxoSmithKline Inc.
7333 Mississauga Road
Mississauga, Ontario
L5N 6L4
1-800-387-7374

This leaflet was prepared by GlaxoSmithKline Inc.

Last revised: November 16, 2006

PART III: CONSUMER INFORMATION

PrVENTOLIN® I.V. infusion solution
salbutamol sulphate for injection

This leaflet is part III of a three-part "Product Monograph" for VENTOLIN® I.V. infusion solution and is designed specifically for Consumers. This leaflet is a summary and will not tell you everything about VENTOLIN® I.V. infusion solution. Contact your doctor or pharmacist if you have any questions about the drug. Only a doctor can prescribe it for you.

ABOUT THIS MEDICATION

What the medication is used for:
Your doctor has prescribed a medicine called VENTOLIN® I.V. infusion solution for you. It is used to help breathing problems in:
- Asthma
- Other chest illnesses.

VENTOLIN® I.V. infusion solution must only be administered by a health professional. It may be injected into muscle tissue or into a vein. **Do not try to use VENTOLIN® I.V. infusion solution on your own.**

What it does:
Salbutamol is one of a group of medicines called bronchodilators. Salbutamol relaxes the muscles in the walls of the small air passages in the lungs. This helps to open up the airways and so helps to relieve chest tightness, wheezing and cough so that you can breathe more easily.

When it should not be used:
Do not use VENTOLIN® I.V. infusion solution if:
- you are allergic to it or any of the components of its formulation (see what the important nonmedicinical ingredients are)
- your heart beats faster than normal
- you are at risk of threatened abortion

What the medicinal ingredient is:
VENTOLIN® I.V. infusion solution contains the active ingredient, salbutamol sulphate.

What the important nonmedicinal ingredients are:
VENTOLIN® I.V. infusion solution contains sodium chloride, sulphuric acid and/or sodium hydroxide.

What dosage forms it comes in:
VENTOLIN® I.V. infusion solution comes in ampules of 5 mL each containing 5 mg of Salbutamol as Salbutamol Sulphate.

WARNINGS AND PRECAUTIONS

Before you use VENTOLIN® I.V. infusion solution, talk to your doctor or pharmacist if:
- you have ever had to stop taking other medications for this illness because you were allergic to them or they caused problems.
- you are having treatment for a thyroid condition.
- you are having treatment for high blood pressure or a heart problem.
- if you have diabetes.
- if you have a past history of seizures.
- if you are pregnant or breastfeeding.

Rare cases of lactic acidosis (too much lactic acid in the blood) have been reported in patients receiving high doses of VENTOLIN® I.V. infusion solution. If you suffer symptoms (see Serious Side Effects Table), contact your doctor immediately.

If you notice that your shortness of breath or wheeze is becoming worse, tell your doctor as soon as possible. If the relief of wheezing or chest tightness is not as good as usual, tell your doctor as soon as possible. It may be that your chest condition is worsening and you may need to add another type of medicine to your treatment.

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INTERACTIONS WITH THIS MEDICATION

Make sure that your doctor knows what other medicines you are taking (such as those for depression, allergies, other airway-opening medications (e.g. other asthma medications), blood pressure and heart medications, and water pills (diuretics), etc.), including those you can buy without a prescription as well as herbal and alternative medicines.

PROPER USE OF THIS MEDICATION

VENTOLIN® I.V. infusion solution should not be self administered by an individual. It should be administered under the supervision of a health professional.

Usual dose:
Continuous intravenous infusion:
5 micrograms/min., increased to 10 micrograms/min., and 20 micrograms/min. at 15 - 30 minute intervals, if necessary. A suitable solution for infusion may be prepared by diluting 5 mL of VENTOLIN I.V. infusion solution (1.0 mg/mL) in 500 mL of a chosen i.v. solution to provide a salbutamol concentration of 10 micrograms/mL.

SIDE EFFECTS AND WHAT TO DO ABOUT THEM

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This is not a complete list of side effects. If you have any unexpected effects after receiving VENTOLIN® I.V. infusion solution, contact your doctor or pharmacist.

SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM

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	Deep and rapid breathing, vomiting, abdominal pain, weight loss, fatigue, malaise (sign of lactic acidosis-too much lactic acid in the blood)			✓

* If you think you have these side effects, it is important that you seek medical advice from your doctor immediately.

HOW TO STORE IT

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Marketed Health Products Directorate
Tunney's Pasture, AL 0701C
Ottawa ON K1A 0K9

NOTE: Before contacting Health Canada, you should contact your physician or pharmacist.

MORE INFORMATION

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