PRODUCT MONOGRAPH

Pr VENTOLIN®

salbutamol sulphate oral liquid solution

0.4 mg/mL

Bronchodilator
(beta$_2$-adrenergic stimulant)

GlaxoSmithKline Inc.
7333 Mississauga Road
Mississauga, Ontario
L5N 6L4

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PrVENTOLIN®

salbutamol sulphate oral liquid solution

PART I: HEALTH PROFESSIONAL INFORMATION

SUMMARY PRODUCT INFORMATION

Route of Administration	Dosage Form / Strength	Clinically Relevant Nonmedicinal Ingredients
Oral	Oral liquid/ 0.4 mg per mL	Not applicable

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

INDICATIONS AND CLINICAL USE

VENTOLIN® (salbutamol sulphate) oral liquid is indicated for:

- The prevention or relief of bronchospasm due to bronchial asthma, chronic bronchitis and other chronic bronchopulmonary disorders in which bronchospasm is a complicating factor.

Pediatrics (< 2 years of age):
VENTOLIN® oral liquid is not recommended in children under 2 years of age, until the dosage regimen and evidence concerning its safety have been established.

CONTRAINDICATIONS

- Patients with hypersensitivity to this drug or to any ingredient in the formulation or component of the container. For a complete listing, see the DOSAGE FORMS, COMPOSITION AND PACKAGING section of the product monograph.
- In patients with tachyarrhythmias.

WARNINGS AND PRECAUTIONS

General

Patients should be advised to always carry their salbutamol aerosol or dry powder inhaler to use immediately if an episode of asthma is experienced. If therapy does not produce a significant improvement or if the patient's condition worsens, medical advice must be sought to determine a new plan of treatment. In the case of acute or rapidly worsening dyspnea, a doctor should be consulted immediately.

Use of Anti-Inflammatory Agents
In accordance with the present practice for asthma treatment, concomitant anti-inflammatory therapy should be part of the regimen if salbutamol needs to be used on a regular daily basis (see DOSAGE AND ADMINISTRATION). It is essential that the physician instruct the patient in the need for further evaluation if the patient's asthma becomes worse.

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 arrhythmias. It is recommended that serum potassium levels be monitored in such situations.

Care should be taken with patients with diabetes mellitus. Salbutamol can induce reversible hyperglycemia during oral or nebulised administration, or especially during infusions of the drug. The diabetic patient may be unable to compensate for this and the development of ketoacidosis has been reported. Concurrent administration of corticosteroids can exaggerate this effect.

Care should be taken with patients with hyperthyroidism.

Hypersensitivity
Immediate hypersensitivity reactions may occur after administration of salbutamol or salbutamol sulphate, 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 suffering from convulsive disorders.

Special Populations

Pregnant Women: Salbutamol has been in widespread use for many years in humans without apparent ill consequence. However, 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 drugs during pregnancy should only be considered if the anticipated benefit to the expectant woman is greater than any possible risks to the fetus (See TOXICOLOGY – teratogenicity studies).

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 congential anomalies is 2 – 3 %, a relationship with salbutamol use cannot be established.

Labour and Delivery: Oral salbutamol has been shown to delay preterm labour in some reports but there are no well controlled studies which demonstrate that it will stop preterm labour or prevent labour at term. Therefore, cautious use of VENTOLIN® (salbutamol sulphate) oral liquid is required in pregnant patients when it is given for the relief of bronchospasm so as to avoid interference with uterine contractility.

Lactating Mothers: Since salbutamol is probably excreted in breast milk and because of its observed tumorigenicity in animal studies, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the benefit of the drug to the mother. It is not known whether salbutamol in breast milk has a harmful effect on the neonate.

Pediatrics: Rarely, erythema multiforme and Stevens-Johnson syndrome have been associated with the administration of salbutamol sulphate 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.

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. Patients should be warned not to exceed the recommended dose.

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. (see DOSAGE AND ADMINISTRATION).

ADVERSE REACTIONS

Adverse Drug Reaction Overview

The most frequent adverse reactions associated with VENTOLIN® (salbutamol sulphate) oral liquid are nervousness, and tremor. In some patients, VENTOLIN® oral liquid may cause a fine tremor of skeletal muscle, particularly in the hands. This effect is common to all beta$_2$-adrenergic stimulants. Adaptation occurs during the first few days of dosing and the tremor usually disappears as treatment continues. A few patients experience a feeling of tension; this is also due to the effects on the skeletal muscle and not to direct CNS stimulation. Headache, tachycardia and palpitations, muscle cramps, insomnia, nausea, weakness and dizziness have also been reported.

Peripheral vasodilatation and a compensatory small increase in heart rate may occur in some patients. Cardiac arrhythmias (including atrial fibrillation, supraventricular tachycardia and extrasystoles) have been reported, usually in susceptible patients.

Rarely, potentially serious hypokalaemia may result from beta$_2$-agonist therapy, mainly from parenteral and nebulized administration. Other rarely reported adverse effects include drowsiness, flushing, restlessness, irritability, chest discomfort, difficulty in micturition, hypertension, angina, vomiting, vertigo, central nervous system stimulation, hyperactivity in children, 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.

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 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: C = Case Study; CS = Class Statement; CT = Clinical Trial; T = Theoretical

DOSAGE AND ADMINISTRATION

Dosing Considerations

Dosages should be individualised, and the patient's response should be monitored by the prescribing physician on an ongoing basis. If a previously effective dosage regimen fails to provide the usual relief, medical advice should be sought immediately; this is a sign of seriously worsening asthma that could require reassessment of therapy.

In accordance with current Canadian asthma guidelines, if salbutamol is required for relief of symptoms more than three times a week (not including its use to prevent exercise-induced bronchospasm); anti-inflammatory therapy (e.g., corticosteroid) should be part of the regimen.

VENTOLIN® (salbutamol sulphate) oral liquid is not intended for patients experiencing an acute episode of bronchospasm. Patients should always carry their salbutamol aerosol or dry powder inhaler to use immediately if an episode of asthma is experienced.

When VENTOLIN® oral liquid is prescribed, the patient should be advised that the action of this medication may last for 6 to 8 hours. As there may be adverse effects associated with excessive dosing, the dosage or frequency of administration should only be increased upon medical advice.

VENTOLIN® oral liquid is not to be used in children under two years of age.

Recommended Dose and Dosage Adjustment

Adults and children over 12 years of age: 5 to 10 mL (2 to 4 mg) 3 to 4 times daily.

Children (6 to 12 years of age): 5 mL (2 mg) 3 to 4 times daily.

Children (2 to 6 years of age): 0.25 mL (0.1 mg) per kg body weight 3 to 4 times daily.

The safety and efficacy of VENTOLIN® oral liquid in children under 2 years of age, and for chronic therapy in children 2-6 years of age have not been established.

In elderly patients or in those known to be unusually sensitive to beta-adrenergic stimulant drugs, it is advisable to initiate treatment with 5 mL (2 mg) three or four times per day.

Missed Dose

If a dose of this medication is missed, it should be taken as soon as possible. However, if it is almost time for the next dose, skip the missed dose and go back to the regular dosing schedule.

Administration
VENTOLIN® oral liquid is administered by the oral route only.
Dilution of VENTOLIN® oral liquid with syrup BP or sorbitol solution is not recommended as this may result in precipitation of the cellulose thickening agent.

VENTOLIN® oral liquid may be diluted with Purified Water BP 50% v/v. The resulting mixture should be protected from light and used within 28 days.

A 50% v/v dilution of VENTOLIN® oral liquid has been shown to be adequately preserved against microbial contamination. However, to avoid the possibility of introducing excessive microbial contamination, the Purified Water used for dilution should be recently prepared or alternatively it should be boiled and cooled immediately before use.

Admixture of salbutamol syrup with other liquid preparation is not recommended.

OVERDOSAGE

Symptoms and Signs
The most common signs and symptoms of overdose with salbutamol are transient beta agonist pharmacologically mediated events (see Warnings and Precautions and Adverse Reactions). Overdosage may cause, peripheral vasodilation and increased irritability of skeletal muscle, hypokalemia, tachycardia, arrhythmia, hypertension and in extreme cases, sudden death. Serum potassium levels should be monitored.

Nausea, vomiting and hyperglycemia have been reported, predominantly in children and when salbutamol overdose has been taken via the oral route.

Treatment
Consideration should be given to discontinuation of treatment and appropriate symptomatic therapy. In case of overdosage, gastric lavage should be performed. In order to antagonise the effect of salbutamol, the use of a beta-adrenergic blocking agent preferably one of the relatively cardioselective ones (e.g. metoprolol, atenolol) may be considered, bearing in mind the danger of inducing an asthmatic attack.

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 fibres. This action is manifested by an improvement in pulmonary function as demonstrated by spirometric measurements.

A measurable decrease in airway resistance is typically observed 30 minutes after an oral dose of salbutamol sulphate. The maximum improvement in pulmonary function usually occurs after 2 to 3 hours, and significant bronchodilator activity has been observed to persist for 6 hours or longer.

STORAGE AND STABILITY

Store at a temperature between 15°C to 25°C. Keep out of reach of children.

Protect from light.

DOSAGE FORMS, COMPOSITION AND PACKAGING

VENTOLIN® (salbutamol sulphate) oral liquid is a clear, colourless, orange flavoured liquid containing 0.4 mg salbutamol per mL. VENTOLIN® oral liquid is available in high density polyethylene bottles of 250 mL. The bottles are closed with white polypropylene caps lines with pulp and vinyl.

VENTOLIN® oral liquid contains salbutamol sulphate and the following excipients: citric acid anhydrous, citric acid solution, hydroxypropyl methylcellulose, orange flavour, purified water, sodium benzoate, sodium citrate dehydrate, sodium chloride, sodium cyclamate and sodium hydroxide.

PART II: SCIENTIFIC INFORMATION

PHARMACEUTICAL INFORMATION

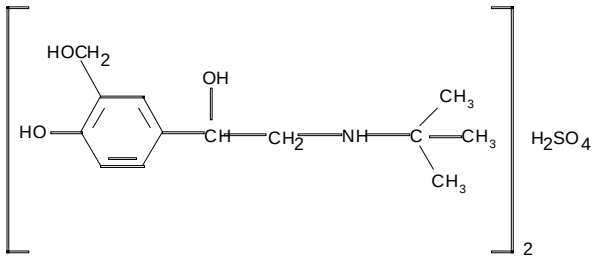
Drug Substance

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: $[C_{13}H_{21}NO_3]_2H_2SO_4$, 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.

Distribution Coefficient: The distribution coefficient of salbutamol between 2 phases of octanol and water, as determined by HPLC, is log D= -0.5 at pH 7.42 at room temperature.

Melting Point: Salbutamol melts at approximately 155^{o}C, with decomposition.

DETAILED PHARMACOLOGY

Animal Pharmacology

Salbutamol has a relatively selective action on the beta$_2$-adrenergic receptors of the bronchial and vascular smooth muscles. In anaesthetised guinea pigs, salbutamol completely prevents acetylcholine induced bronchospasm at the dose of 100 mcg/kg intravenously.

In anesthetized dogs, salbutamol is 1/5 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 a dose of 250 mcg/mL for 1 minute to guinea pigs prevented acetylcholine induced bronchospasm without any effect on the heart rate.

In anaesthetised 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 six dogs with right-sided cardiac by-pass, salbutamol, given at the dose of 25 mcg/kg, 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 Pharmacology

A single dose of 5 mg of salbutamol orally produced and increase of FEV_1 greater than that obtained from inhalation of 200 mcg of isoprenaline. The effect was sustained for more than 5 hours with an onset after fifteen minutes and a peak effect at 3 hours. Salbutamol is not inactivated by catechol-o-methyl transferase and this contributes to the prolonged action of the drug.

Following oral administration of tritiated salbutamol sulphate to man, peak plasma levels were attained within 2.5 hours and declined with a terminal half-life of 3 to 5 hours. Roughly 70% of the administered dose was excreted in the urine within 24 hours.

Salbutamol sulphate, administered orally to healthy volunteers in a dose of 4 mg, raised plasma levels of insulin, glucose, and non-esterified fatty acids, had no effect on triglyceride levels, and lowered serum potassium.

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 2 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

Species (n)	Oral LD_{50}	Intravenous LD_{50}
Mouse (10)	> 2000 mg/kg	72 mg/kg
Rat (10)	> 2000 mg/kg	60 mg/kg

Rat (n)	Intraperitoneal LD_{50}
Newborn (155)	216 mg/kg
Weanling (100)	524 mg/kg
6 week old (90)	437 mg/kg

(number of animals in brackets)

Animals which died had convulsions and cyanosis. Death occurred mostly within four hours after administration. Respiration first increased, then decreased to abnormally slow and deep.

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

Intermediate (Four Months) Toxicity

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

Dogs: Salbutamol was given in oral doses from 0.05 up to 12.5 mg/kg daily, on an increasing scale. The rate of increase of haemoglobin and packed cell volume was depressed, particularly at higher doses. Leukocyte count decreased after sixteen 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 which was 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.

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; 50 female Charles River CD Sprague-Dawley derived rats received 20 mg/kg/day salbutamol orally for 50 weeks; and 50 female Charles River Long Evans rats received 20 mg/kg/day salbutamol orally for 96 weeks. These studies demonstrated a dose related incidence of mesovarian leiomyomas. No similar tumours were seen in mice.

Mutagenicity

In vitro tests involving 4 different 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-administration 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

Salbutamol has been shown to be teratogenic in mice when given in doses corresponding to 14 times the human aerosol dose; when given subcutaneously 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%) fetuses at 0.25 mg/kg and in 10 of 108 (9.3%) fetuses at 2.5 mg/kg. No cleft palates were observed at a dose of 0.025 mg/kg salbutamol. Cleft palate occurred in 22 of 72 (30.5%) fetuses treated with 2.5 mg/kg isoprenaline (positive control).

In rats, salbutamol treatment given orally at 0.5, 2.32, 10.75 and 50 mg/kg/day throughout pregnancy resulted in no significant fetal abnormalities. However, at the highest dose level there was an increase in neonatal mortality. Reproduction studies in rats revealed no evidence of impaired fertility.

Salbutamol had no adverse effect when given orally to Stride Dutch rabbits, at doses of 0.5, 2.32 and 10.75 mg/kg/day throughout pregnancy. At a dose of 50 mg/kg/day, which represents 78 times the maximum human oral dose, cranioschisis was observed in 7 of 19 (37%) fetuses.

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PART III: CONSUMER INFORMATION

Pr VENTOLIN®
salbutamol sulphate oral liquid

This leaflet is part III of a three-part "Product Monograph" published for VENTOLIN® oral liquid and is designed specifically for Consumers. This leaflet is a summary and will not tell you everything about VENTOLIN® oral liquid. Contact your doctor or pharmacist if you have any questions about the drug. Only a doctor can prescribe it for you. Never give it to someone else. It may harm them even if their symptoms are the same as yours.

ABOUT THIS MEDICATION

What the medication is used for:
Your doctor prescribed a medicine called VENTOLIN® (salbutamol sulphate) oral liquid is used to help breathing problems in:
- Asthma.
- Other chest illnesses.

What it does:
Salbutamol is one 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 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® oral liquid if:
- you are allergic to salbutamol or any components of the formulation (see What the important nonmedicinal ingredients are).
- your heart beats faster than normal.

What the medicinal ingredient is:
VENTOLIN® oral liquid contains the active ingredient, salbutamol sulphate.

What the important nonmedicinal ingredients are:
VENTOLIN® oral liquid contains citric acid anhydrous, citric acid solution, hydroxypropyl methylcellulose, orange flavour, purified water, sodium benzoate, sodium citrate dehydrate, sodium chloride, sodium cyclamate and sodium hydroxide.

What dosage forms it comes in:
VENTOLIN® oral liquid is a clear, colourless, orange flavoured liquid containing 0.4 mg salbutamol per mL. VENTOLIN® oral liquid is available in 250 mL plastic bottles.

WARNINGS AND PRECAUTIONS

BEFORE you use VENTOLIN® oral liquid 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 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, of if you are breast feeding a baby. However, there may be circumstances when your doctor advises you differently.

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

Adults and children over 12 years of age: 5 to 10 mL (2 to 4 mg) 3 to 4 times daily.

Children (6 to 12 years of age): 5 mL (2 mg) 3 to 4 times daily.

Children (2 to 6 years of age): 0.25 mL (0.1 mg) per kg body weight 3 to 4 times daily.

VENTOLIN® oral liquid solution should not be used in children under 2 years of age.

In elderly patients or in those known to be unusually sensitive to beta-adrenergic stimulant drugs, begin treatment with 5 mL (2 mg) three to four times per day.

Usual Dose
The action of VENTOLIN® oral liquid may last for 6 to 8 hours. Do not increase the dose or how often you take your medicine without informing your doctor.

If VENTOLIN® oral liquid is required for relief of symptoms more than 2 times a day on a regular daily basis, or for an extended period of time, anti-inflammatory therapy should be part of the medication you take.

VENTOLIN® oral liquid is not intended for patients experiencing a sudden asthma attack. Patients should always carry their salbutamol aerosol or dry powder inhaler to use immediately if an episode of asthma is experienced.

Overdose:
In the event you take a larger dose of VENTOLIN® oral liquid than is prescribed to you, tell your doctor without delay or contact your hospital or nearest poison control centre.

Missed Dose:
If a dose of this medication is missed, it should be taken as soon as possible. However, if it is almost time for the next dose, skip the missed dose and go back to the regular dosing schedule. Do not double dose.

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.

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

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

If you notice a sudden worsening of your shortness of breath and wheeze shortly after using your VENTOLIN® oral liquid, tell your doctor as soon as possible.

Some people can be allergic to medicines. If you have any of the following symptoms soon after taking VENTOLIN® oral liquid, **stop** taking this medicine and tell your doctor immediately.

- Sudden wheeziness and chest pain or tightness.
- Swelling of eyelids, face, lips, tongue or throat.
- Lumpy skin rash or "hives" anywhere on the body.

HOW TO STORE IT

Store at a temperature between 15°C to 25°C. Keep out of reach of children.

Protect from light.

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 found at: http://www.gsk.ca or by contacting the sponsor,
GlaxoSmithKline Inc.
7333 Mississauga Road
Mississauga, Ontario
L5N 6L4
1-800-387-7374

This leaflet was prepared by GlaxoSmithKline Inc.

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