

# Albuterol vs. Xopenex

## Objectives:

- 1) To compare Albuterol and Xopenex
- 2) To learn/review drugs that interact with Albuterol and Xopenex.
- 3) To learn/review the side effects of Albuterol and Xopenex.
- 4) To learn/review the precautions with using Albuterol and Xopenex

## Albuterol

**Generic Name:** Albuterol

**Brand Name:** Proventil, Ventolin, Volmax

**Active Ingredients:** Albuterol Sulfate, Ipratropium Bromide

**Strength:** 2.5 mg/3ml

**How should albuterol be stored?** In a cool, dry, place away from sunlight. Do not freeze.

**Cost:** \$0.32 per 2.5 mg dose

### *What is Albuterol?*

Albuterol is a bronchodilator used in treating asthma and other conditions with reversible airway obstruction. It works by relaxing muscles in the airways to improve breathing. Albuterol is used to prevent and treat wheezing, shortness of breath, and troubled breathing caused by asthma, chronic bronchitis, emphysema, and other lung diseases. Albuterol is also used to prevent breathing difficulties (bronchospasm) during exercise. Symptoms of bronchospasm include: coughing, wheezing, chest tightness and shortness of breath.

Asthma is a breathing problem involving widespread narrowing of the airways (bronchial tubes). Airways are breathing passages that allow air to move in and out of the lungs. These airways can be narrowed due to the accumulation of mucous, spasms of the muscles that surround these airways, or swelling of the lining of the airways. Airway narrowing leads to shortness of breath, wheezing, cough, and congestion. Albuterol dilates bronchial airways by relaxing the surrounding bronchial muscles, improving breathing. Albuterol can also help in patients with emphysema, chronic bronchitis, and other lung diseases when their symptoms are partially related to reversible airway obstruction.

### ***Drug Interactions:***

Albuterol is used with caution in patients with CAD or in patients with cardiac rhythm disturbances (arrhythmias). Use of albuterol together with other stimulant medications is discouraged because of their combined effects on the heart rate, blood pressure, and the potential for causing chest pain in patients with underlying CAD. In rare patients, inhaled albuterol can paradoxically precipitate life threatening bronchospasms. Allergic reactions may rarely occur and can cause a rash, hives, swelling, bronchospasms, and anaphylaxis. Worsening of diabetes and lowering of potassium have also been reported.

### ***Other Drugs That Effect Albuterol:***

- ✕ Tricyclic antidepressant such as amitriptyline (Elavil), doxepin (Sinequan), nortriptyline (Pamelor), and others.
- ✕ Beta blockers such as acebutolol (Sectral), atenolol (Tenormin), carvedilol (Coreg), metoprolol (Lopressor), propranolol (Inderal), and others.
- ✕ Diuretics (water pills) such as furosemide (Lasix), bumetanide (Bumex), ethacrynic acid (Edecrin), torsemide (Demadex), hydrochlorothiazide (Hydrodiuril), chlorthalidone (chlorthalidone (Hygroton, Thalitone), chlorothiazide (Diuril), and others.
- ✕ Monoamine oxidase inhibitor such as (MAOI) isocarboxazid (Marplan), phenelzine (Nardil), or tranylcypromine (Parnate).
- ✕ Medicine such as atropine, belladonna, clidinium (Quarzan), dicyclanide (Bentyl), scopolamine (Transderm-Scop), propantheline (Pro-Banthine), mepenzolate (Cantil), methantheline (Banthine), methscopolamine (Pamine), and others.
- ✕ Caffeine, diet pills, or decongestants.

### ***Side Effects:***

- ✕ Seizures
- ✕ Nervousness
- ✕ Shakiness
- ✕ Dizziness
- ✕ Excitement
- ✕ Headache
- ✕ Insomnia
- ✕ Nosebleed
- ✕ Increased appetite
- ✕ Nausea
- ✕ Vomiting
- ✕ Diarrhea
- ✕ Stomach pain
- ✕ Muscle cramps
- ✕ Cough
- ✕ Dry mouth

✕ Throat irritation

***More Serious Side Effects:***

- ✕ Rapid, pounding or irregular heartbeat
- ✕ Chest pain or discomfort
- ✕ Severe rash
- ✕ Hives
- ✕ Itching
- ✕ Increased difficulty breathing
- ✕ Difficulty swallowing
- ✕ Swelling of the face, throat, tongue, lips, eyes, hands, feet, ankles, or lower legs
- ✕ Hoarseness

***General Precautions with using Albuterol:***

- ✕ Heart diseases
- ✕ High blood pressure
- ✕ Epilepsy or another seizure disorder
- ✕ Diabetes
- ✕ An overactive thyroid (hyperthyroidism)
- ✕ Difficulty swallowing
- ✕ Liver disease
- ✕ Kidney disease

Those with the above conditions may not be able to take albuterol or may require a dosage adjustment or special monitoring during treatment.

## **Xopenex**

**Generic Name: Levalbuterol**

**Brand Name: Xopenex**

**Active Ingredient: Levalbuterol HCl**

**Strength: 1.25 mg/3ml**

**How should xopenex be stored? In the protective foil pouch at room temperature (66 degrees F to 77 degrees F.) Protect from freezing temperature and direct sunlight. Once the foil pouch is opened, the xopenex should be used within two weeks.**

**Cost: \$1.82 per 1.25 mg dose**

### ***What is Xopenex?***

Xopenex Inhalation Solution is a sterile, clear, colorless, preservative-free solution of the hydrochloride salt of levalbuterol, the ®-enantiomer of the drug substance racemic albuterol. Xopenex is used to treat or prevent narrowing of the airways (bronchospasm) in patients six years of age and older with reversible obstructive airway disease, e.g. asthma.

Like other inhaled beta-adrenergic agonists, Xopenex can produce paradoxical bronchospasm, which may be life threatening. If paradoxical bronchospasm occurs, Xopenex should be discontinued immediately and alternative therapy instituted. It should be recognized that paradoxical bronchospasm, when associated with inhaled formulations, frequently occurs with the first use of a new canister or vial.

Xopenex, also like other beta-adrenergic agonists, can produce a clinically significant cardiovascular effect in some patients, as measured by pulse rate, blood pressure, and/or symptoms. Although such effects are uncommon after administration of Xopenex at recommended doses, if they do occur, the drug may need to be discontinued. In addition, beta-agonists have been reported to produce ECG changes, such as flattening of the T wave, prolongation on the QTc interval, and ST segment depression. The clinical significance of these findings is unknown. Clinical significant changes in systolic and diastolic blood pressure have been seen in individual patients and could be expected to occur in some patients after the use of any beta-adrenergic bronchodilator.

### ***Drug Interactions:***

Because of the potential to interact with Xopenex and cause side effects, the healthcare provider should be made aware if the patient is taking other medications such as :

- ✕ diuretics such as furosemide and HCTZ
- ✕ antidepressants such as monoamine oxidase inhibitors or tricyclic antidepressants
- ✕ drugs known to affect the heart's regular rhythm
- ✕ drugs used for high blood pressure or after a heart attack, such as metoprolol or atenolol

### ***Other Drugs That Effect Xopenex:***

MAO inhibitors (e.g., furazolidone, linezolid, phenelzine, selegiline, tranylcyprom, moclobemide)

Adrenaline-like drugs (e.g., epinephrine, ephedrine, pseudoephedrine)

Tricyclic antidepressants (e.g., amitriptylin, nortriptyline)

Thyroid drugs

Ritodrine

Digoxin

***Side Effects:***

- ✕ Temporary increase in heart rate
- ✕ Tremors
- ✕ Nervousness
- ✕ Nausea
- ✕ Dry mouth
- ✕ Seizures
- ✕ Leg cramps
- ✕ Light-headedne

***More Serious Side Effects:***

- ✕ Fast/irregular heartbeat
- ✕ Fainting
- ✕ Chest pain
- ✕ Rash/itching
- ✕ Swelling
- ✕ Trouble breathing

***General Precautions with using Xopenex:***

- ✕ Heart disease (e.g., reduced heart circulation, high blood pressure, and irregular heartbeat.
- ✕ Seizures
- ✕ Hyperthyroidism
- ✕ Diabetes

Those with the above conditions may not be able to take albuterol or may require a dosage adjustment or special monitoring during treatment.