Mechanism of Action

- stimulate beta2-adrenergic receptors, increasing the production of cyclic 3′5′ adenosine monophosphate (cAMP).
-Increased cAMP relaxes airway smooth muscle and increases bronchial ciliary activity.

Dosage and Time Frame for Response (Short Acting)

-have a quick onset (peak effect 10 minutes) and a short duration of action (3–4 hours).
-half-life can range from 2.7 hours to 6 hours.
-SABAs are indicated for the relief of acute respiratory symptoms in asthma and COPD.

Dosage and Time Frame for Response (Long Acting)

- include formoterol, salmeterol, and vilanterol.
- half-life can range from 5.5 hours to 11 hours.
-Formoterol has an onset of action of 3 minutes and a 12-hour duration of action.
-Salmeterol has an onset of action of about 2 hours and a 12-hour duration of action.
-Vilanterol has an onset of action of about 15 minutes and a 24-hour duration of action.
-LABAs are indicated for chronic maintenance therapy in COPD but only with an ICS for asthma.

Oral and Paternal Forms

-are available but have limited clinical use due to the quick onset of action, ease of administration, beta2-adrenergic specificity, and minimal systemic exposure with the inhaled route of administration.

Contraindications

-contraindicated in persons with a history of hypersensitivity to beta-adrenergic agonists or any component of the formulation.
-should be used with caution in patients with known cardiovascular disease, diabetes mellitus, glaucoma, hyperthyroidism, or seizure disorders.

Adverse Events (SABA)

- Serious events: paradoxical bronchospasm, anaphylaxis, hypersensitivity reaction, angioedema, hypertension, hypotension, angina, cardiac arrest, arrhythmia, hypokalemia, and hyperglycemia.
-Common adverse events: throat irritation, upper respiratory infection symptoms, cough, bad taste, tremor, dizziness, nervousness, nausea/vomiting, headache, palpitations, tachycardia, chest pain, pain, and hyperlactatemia.

Adverse Events (LABA)

-Serious events: paradoxical bronchospasm, asthma exacerbation, asthma-related death, laryngospasm, hypersensitivity reaction, anaphylaxis, hypertension, hypotension, angina, cardiac arrest, arrhythmia, hypokalemia, and hyperglycemia.
-Common adverse events: headache, throat irritation, nasal congestion, rhinitis, tracheitis/bronchitis, pharyngitis, urticaria, rash, palpitations, tachycardia, tremor, and nervousness.

Interactions

- sympathomimetic drugs (e.g., catecholamines, catecholamine analogs, amphetamines) increase the risk for beta2-adrenergic agonist adverse effects and toxicities.
-Nonselective and higher doses of beta1--selective adrenergic blocking drugs diminish the bronchodilator effects of the beta2-adrenergic agonists.
-Concurrent administration of beta-adrenergic agonists and monoamine oxidase inhibitors (MAOIs) or tricyclic antidepressants (TCAs) increases blood pressure and the risk of stroke.

Interactions Continued

-MAOIs and TCAs must be discontinued at least 14 days prior to initiating.
-Thiazide (e.g., hydrochlorothiazide) and loop diuretics (e.g., furosemide) enhance the hypokalemic effects.
-The oxazolidinones (e.g., linezolid, tedizolid) enhance the hypertensive effects.
-Atomoxetine, a selective norepinephrine reuptake inhibitor indicated for the management of attention-deficit hyperactivity disorder, may increase the tachycardic effects.