5.10: Beta-2 Agonist


Salmeterol is an example of a long-acting Beta-2 agonist.

See the “Autonomic Nervous System” chapter for more information regarding Beta-2 agonists.
Mechanism of Action

Albuterol and salmeterol stimulate Beta 2-adrenergic receptors in the smooth muscle of bronchi and bronchioles producing bronchodilation. Beta-1 receptors can also be inadvertently stimulated, causing tachycardia.

Indications for Use

Short-acting albuterol is used to prevent or treat bronchospasms in people with asthma, reversible obstructive airway disease, or exercise-induced bronchospasm. Long-acting salmeterol is used to prevent bronchospasm.

Adverse/Side Effects

Beta-2 agonists can cause muscle tremor, excessive cardiac stimulation, and CNS stimulation.\[^{3}\]
Patient Teaching & Education

Patients should be instructed to take medication as directed and report any sustained or worsening symptoms to their healthcare provider. When first using an inhaler, patients should be instructed to prime the inhaler unit prior to administering their medication. Use of medications like albuterol can cause an unusual taste in the mouth and rinsing the mouth with water after use is permitted. Patients should have an understanding of medication onset and use short-acting and long-acting inhalers appropriately.\[^4\]

Now let’s take a closer look at the medication grid for albuterol and salmeterol in Table 5.10.

### Table 5:10 Albuterol and Salmeterol Medication Grid

<table>
<thead>
<tr>
<th>Class/Subclass</th>
<th>Prototype/Generic</th>
<th>Administration Consideration</th>
<th>Therapeutic Effects</th>
<th>Adverse/Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-acting Beta-2 agonist (SABA)</strong></td>
<td>albuterol</td>
<td>Fast onset of action</td>
<td>Rapid bronchodilation</td>
<td>CNS stimulation (excitability)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Has a slow onset of action and will not abort an acute bronchospasm</td>
<td>Prevention of bronchospasm</td>
</tr>
<tr>
<td><strong>Long-acting Beta-2 agonist (LABA)</strong></td>
<td>salmeterol</td>
<td>Increased risk of death with use during an “asthma attack” due to slow onset of action</td>
<td></td>
<td>Tachycardia, dysrhythmias, hypokalemia, hyperglycemia, paradoxical bronchoconstriction, and increased risk for asthma-related death</td>
</tr>
</tbody>
</table>

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