

# Summary of Product Characteristics

## 1 NAME OF THE MEDICINAL PRODUCT

Sirdupla 25 microgram/250 microgram per metered dose pressurised inhalation, suspension

## 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each metered dose (ex valve) contains:

25 micrograms of salmeterol (as salmeterol xinafoate) and 250 micrograms of fluticasone propionate. This is equivalent to a delivered dose (ex actuator) of 21 micrograms of salmeterol and 220 micrograms of fluticasone propionate.

### Excipients with known effect:

This medicinal product contains 0.73 mg of alcohol per inhalation.

For the full list of excipients, see section 6.1.

## 3 PHARMACEUTICAL FORM

Pressurised inhalation, suspension.

The canister contains a white to off white suspension.

The canisters are fitted into white plastic actuators incorporating an atomising orifice and fitted with burgundy dustcaps.

## 4 CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Sirdupla is indicated in the regular treatment of asthma where use of a combination product (long- acting  $\beta_2$  agonist and inhaled glucocorticosteroid) is appropriate:

- - patients not adequately controlled with inhaled glucocorticosteroids and 'as needed' inhaled short-acting  $\beta_2$  agonist or
- - patients already adequately controlled on both inhaled glucocorticosteroid and long-acting  $\beta_2$  agonist.

### 4.2 Posology and method of administration

Sirdupla is indicated in adults 18 years of age and older only.

Sirdupla is not indicated for use in children, 12 years of age and younger or adolescents, 13 to 17 years of age.

#### Posology

Patients should be made aware that salmeterol/fluticasone propionate must be used daily for optimum benefit, even when asymptomatic.

Patients should be regularly reassessed by a doctor, so that the strength of salmeterol/fluticasone propionate they are receiving remains optimal and is only changed on medical advice. **The dose should be titrated to the lowest dose at which effective control of symptoms is maintained. To Note: Sirdupla is only available in two strengths; it is not available in a lower strength product containing salmeterol 25 microgram and fluticasone propionate 50 microgram, a strength which is available for other similar fixed-dose combination products containing these two actives and currently available on the market.** Therefore, when it is appropriate to titrate down to a dose of inhaled glucocorticosteroid below 125 micrograms, a change to an alternative fixed-dose combination of salmeterol and fluticasone propionate containing a lower dose of the inhaled glucocorticosteroid is required.

**When long-term control of symptoms is maintained with the lowest strength of such an alternative fixed-dose combination given twice daily, then the next step could include a test of inhaled glucocorticosteroid alone.** As an alternative, patients requiring a long-acting  $\beta_2$  agonist rather than treatment with an inhaled glucocorticosteroid alone, could be titrated to once daily use of this alternative lowest strength combination product if, in the opinion of the prescriber, it would

be adequate to maintain disease control. In the event of once daily dosing when the patient has a history of nocturnal symptoms the dose should be given at night and when the patient has a history of mainly daytime symptoms the dose should be given in the morning.

Sirdupla should not be used for patients with mild asthma. Sirdupla could be considered for use in patients with moderate persistent asthma but only where control of symptoms cannot be maintained with a lower strength product containing a lower dose of the glucocorticosteroid.

Patients should be given the strength of salmeterol/fluticasone propionate containing the appropriate fluticasone propionate dosage for the severity of their disease. If an individual patient should require dosages outside the recommended regimen, appropriate doses of  $\beta_2$  agonist and/or glucocorticosteroid should be prescribed.

#### Recommended doses:

##### *Adults 18 years and older:*

Two inhalations of 25 micrograms salmeterol and 250 micrograms fluticasone propionate twice daily.

A short term trial of salmeterol/fluticasone propionate may be considered as initial maintenance therapy in adults with moderate persistent asthma (defined as patients with daily symptoms, daily rescue use and moderate to severe airflow limitation) for whom rapid control of asthma is essential. In these cases, the recommended initial dose is two inhalations of 25 micrograms salmeterol and 50 micrograms fluticasone propionate twice daily. **To Note: Sirdupla is not available in the lowest strength of this combination as currently available on the market and therefore an alternative fixed-dose combination of salmeterol and fluticasone propionate containing a lower dose of the inhaled glucocorticosteroid would need to be prescribed for the initial maintenance therapy in adults with moderate persistent asthma.** The dose of the inhaled glucocorticosteroid may need to be increased to achieve control of asthma symptoms but once control is attained treatment should be reviewed and the dose of the inhaled glucocorticosteroid titrated downwards to the lowest dose at which effective control of symptoms is maintained. Consideration may be given as to whether patients should be stepped down to an inhaled glucocorticosteroid alone from the lowest strength combination product. Regular review of patients as treatment is stepped down is important.

A clear benefit has not been shown as compared to inhaled fluticasone propionate alone used as initial maintenance therapy when one or two of the criteria of severity are missing. In general, inhaled glucocorticosteroids remain the first line treatment for most patients. Sirdupla is not intended for the initial management of mild asthma. It is recommended to establish the appropriate dosage of inhaled glucocorticosteroid before any fixed-combination can be used in patients with severe asthma.

##### *Paediatric population:*

The safety and efficacy of Sirdupla in children, 12 years and younger, and adolescents, 13-17 years of age have not been established. Sirdupla is not recommended for use in children and adolescents under 18 years of age (see section 5.1).

Use of an AeroChamber Plus® spacer device with Sirdupla is recommended in patients who have, or are likely to have, difficulties in coordinating actuation with inspiration. **Only the AeroChamber Plus® spacer device should be used with Sirdupla. Other spacing devices should not be used with Sirdupla and patients should not switch from one spacer device to another.**

Patients should be instructed in the proper use and care of their inhaler and spacer and their technique checked to ensure optimum delivery of the inhaled drug to the lungs. **Patients should use the recommended spacer device as switching to another spacer device can result in changes in the dose delivered to the lungs (see section 4.4).**

Re-titration to the lowest effective dose should always be carried out when patients who have previously used an alternative product and spacer device are then transferred to Sirdupla with or without the AeroChamber Plus® spacer device.

##### *Special patient groups:*

There is no need to adjust the dose in elderly patients or in those with renal impairment. There are no data available for use of salmeterol/fluticasone propionate in patients with hepatic impairment.

#### Method of administration

For inhalation use.

Instructions for Use:

Patients should be instructed in the proper use of their inhaler (see patient information leaflet). During inhalation, the patient should preferably sit or stand.

The inhaler has been designed for use in a vertical position.

Testing the inhaler:

Before using the inhaler for the first time patients should test that it is working. Patients should remove the mouthpiece cover by gently squeezing the sides of the cover and hold the inhaler between the fingers and thumb with their thumb on the base, below the mouthpiece. To make sure that the inhaler works, the patient should shake it well, point the mouthpiece away from them and press the canister firmly to release a puff into the air. These steps should be repeated at least three times, shaking the inhaler before releasing each puff, until the counter reads 120.

If the inhaler has not been used for a week or more, or the inhaler gets very cold (below 0°C) the mouthpiece cover should be removed, the patient should shake the inhaler well and should release two puffs into the air.

Each time the inhaler is activated the number on the counter will count down by one.

Use of the inhaler:

1. Patients should remove the mouthpiece cover by gently squeezing the sides of the cover.
2. Patients should check inside and outside of the inhaler including the mouthpiece for the presence of loose objects.
3. Patients should shake the inhaler well to ensure that any loose objects are removed and that the contents of the inhaler are evenly mixed.
4. Patients should hold the inhaler upright between fingers and thumb with their thumb on the base, below the mouthpiece.
5. Patients should breathe out as far as is comfortable and then place the mouthpiece in their mouth between their teeth and close their lips around it. Patients should be instructed not to bite the mouthpiece.
6. Just after starting to breathe in through their mouth, patients should press firmly down on the top of the inhaler to release the medicine while still breathing in steadily and deeply.
7. While holding their breath, patients should take the inhaler from their mouth and take their finger from the top of the inhaler. Patients should continue holding their breath for as long as is comfortable.
8. To take a second inhalation, patients should keep the inhaler upright and wait about half a minute before repeating steps 3 to 7.
9. Patients should immediately replace the mouthpiece cover by firmly pushing and snapping the cap into position. This does not require excessive force, the cover should click into position.

**IMPORTANT**

Patients should not rush stages 5, 6 and 7. It is important that patients start to breathe in as slowly as possible just before operating their inhaler. Patients should practise in front of a mirror for the first few times. If they see "mist" coming from the top of their inhaler or the sides of their mouth they should start again from stage 3.

Patients should rinse their mouth out with water and spit out, and/or brush their teeth after each dose of medicine, in order to minimise the risk of oropharyngeal candidiasis and hoarseness.

Patients should consider getting a replacement when the counter shows the number 20. The counter will stop at 0 when all the recommended puffs have been used. Replace the inhaler when the counter reads 0.

Patients should never try to alter the numbers on the counter or detach the counter from the actuator. The counter cannot be reset and is permanently attached inside the actuator.

Cleaning (also detailed in patient information leaflet): Your inhaler should be cleaned at least once a week.

1. Remove the mouthpiece cover.
2. Do not remove the canister from the plastic casing.
3. Wipe the inside and outside of the mouthpiece and the plastic casing with a dry cloth or tissue.
4. Replace the mouthpiece cover. This does not require excessive force, the cover should click into position. **DO NOT WASH OR PUT ANY PARTS OF THE INHALER IN WATER.**

### 4.3 Contraindications

Hypersensitivity to the active substances or to any of the excipients listed in section 6.1.

### 4.4 Special warnings and precautions for use

Salmeterol/fluticasone propionate should not be used to treat acute asthma symptoms for which a fast- and short- acting bronchodilator is required. Patients should be advised to have their inhaler to be used for relief in an acute asthma attack available at all times.

Patients should not be initiated on salmeterol/fluticasone propionate during an exacerbation, or if they have significantly worsening or acutely deteriorating asthma.

Serious asthma-related adverse events and exacerbations may occur during treatment with salmeterol/fluticasone propionate. Patients should be asked to continue treatment but to seek medical advice if asthma symptoms remain uncontrolled or worsen after initiation on Sirdupla.

Increased requirements for use of reliever medication (short-acting bronchodilators), or decreased response to reliever medication, indicate deterioration of asthma control and patients should be reviewed by a physician.

Sudden and progressive deterioration in control of asthma is potentially life-threatening and the patient should undergo urgent medical assessment. Consideration should be given to increasing glucocorticosteroid therapy.

Once asthma symptoms are controlled, consideration may be given to gradually reducing the dose of salmeterol/fluticasone propionate. Regular review of patients as treatment is stepped down is important. The lowest effective dose of the combination of salmeterol and fluticasone propionate (which may mean a change to an alternative fixed-dose combination of salmeterol and fluticasone propionate containing a lower dose of the inhaled glucocorticosteroid) should be used (see section 4.2).

Treatment with salmeterol/fluticasone propionate should not be stopped abruptly due to risk of exacerbation. Therapy should be down-titrated under physician supervision.

As with all inhaled medication containing glucocorticosteroids, salmeterol/fluticasone propionate should be administered with caution in patients with active or quiescent pulmonary tuberculosis and fungal, viral or other infections of the airway. Appropriate treatment should be promptly instituted, if indicated.

Rarely, salmeterol/fluticasone propionate may cause cardiac arrhythmias e.g. supraventricular tachycardia, extrasystoles and atrial fibrillation, and a mild transient reduction in serum potassium at high therapeutic doses. Salmeterol/fluticasone propionate should be used with caution in patients with severe cardiovascular disorders or heart rhythm abnormalities and in patients with diabetes mellitus, thyrotoxicosis, uncorrected hypokalaemia or patients predisposed to low levels of serum potassium.

There have been very rare reports of increases in blood glucose levels (see section 4.8) and this should be considered when prescribing to patients with a history of diabetes mellitus.

As with other inhalation therapy, paradoxical bronchospasm may occur with an immediate increase in wheezing and shortness of breath after dosing. Paradoxical bronchospasm responds to a rapid-acting bronchodilator and should be treated straightaway. Sirdupla should be discontinued immediately, the patient assessed and alternative therapy instituted if necessary.

The pharmacological side effects of  $\beta_2$  agonist treatment, such as tremor, palpitations and headache, have been reported, but tend to be transient and reduce with regular therapy.

Systemic effects may occur with any inhaled glucocorticosteroid, particularly at high doses prescribed for long periods. These effects are much less likely to occur than with oral glucocorticosteroids. Possible systemic effects include Cushing's syndrome, Cushingoid features, adrenal suppression, decrease in bone mineral density, cataract and glaucoma and more rarely, a range of psychological or behavioural effects including psychomotor hyperactivity, sleep disorders, anxiety, depression or aggression (particularly in children) (see *Paediatric population* sub-heading below for information on the systemic effects of inhaled

glucocorticosteroids in children and adolescents). **It is important, therefore, that the patient is reviewed regularly and the dose of inhaled glucocorticosteroid is reduced to the lowest dose at which effective control of asthma is maintained.**

Visual disturbance may be reported with systemic and topical corticosteroid use. If a patient presents with symptoms such as blurred vision or other visual disturbances, the patient should be considered for referral to an ophthalmologist for evaluation of possible causes which may include cataract, glaucoma or rare diseases such as central serous chorioretinopathy (CSCR) which have been reported after use of systemic and topical corticosteroids.

Prolonged treatment of patients with high doses of inhaled glucocorticosteroids may result in adrenal suppression and acute adrenal crisis. Very rare cases of adrenal suppression and acute adrenal crisis have also been described with doses of fluticasone propionate between 500 and less than 1000 micrograms. Situations, which could potentially trigger acute adrenal crisis, include trauma, surgery, infection or any rapid reduction in dosage. Presenting symptoms are typically vague and may include anorexia, abdominal pain, weight loss, tiredness, headache, nausea, vomiting, hypotension, decreased level of consciousness, hypoglycaemia, and seizures. Additional systemic glucocorticosteroid cover should be considered during periods of stress or elective surgery.

Systemic absorption of salmeterol and fluticasone propionate is largely through the lungs. As the use of a spacer device with a metered dose inhaler may increase drug delivery to the lungs it should be noted that this could potentially lead to an increase in the risk of systemic adverse effects. Single dose pharmacokinetic data have demonstrated that the systemic exposure to salmeterol and fluticasone propionate may be increased as much as two-fold when the AeroChamber Plus® spacer device is used with a fixed-dose combination of salmeterol and fluticasone propionate as compared with the Volumatic® spacer device.

The benefits of inhaled fluticasone propionate therapy should minimise the need for oral steroids, but patients transferring from oral steroids may remain at risk of impaired adrenal reserve for a considerable time. Therefore, these patients should be treated with special care and adrenocortical function regularly monitored. Patients who have required high dose emergency glucocorticosteroid therapy in the past may also be at risk. This possibility of residual impairment should always be borne in mind in emergency and elective situations likely to produce stress, and appropriate glucocorticosteroid treatment must be considered. The extent of the adrenal impairment may require specialist advice before elective procedures.

Ritonavir can greatly increase the concentration of fluticasone propionate in plasma. Therefore, concomitant use should be avoided, unless the potential benefit to the patient outweighs the risk of systemic glucocorticosteroid side effects. There is also an increased risk of systemic side effects when combining fluticasone propionate with other potent CYP3A inhibitors (see section 4.5).

There was an increased reporting of lower respiratory tract infections (particularly pneumonia and bronchitis) in a 3 year study in patients with Chronic Obstructive Pulmonary Disease (COPD) receiving salmeterol and fluticasone propionate as a fixed-dose combination administered via the Diskus®/Accuhaler® compared with placebo (see section 4.8). In a 3-year COPD study, older patients, patients with a lower body mass index (<25 kg/m<sup>2</sup>) and patients with very severe disease (FEV<sub>1</sub><30% predicted) were at greatest risk of developing pneumonia regardless of treatment. Physicians should remain vigilant for the possible development of pneumonia and other lower respiratory tract infections in patients with COPD as the clinical features of such infections and exacerbation frequently overlap. If a patient with severe COPD has experienced pneumonia the treatment with Sirdupla should be re-evaluated. The safety and efficacy of Sirdupla has not been established in patients with COPD and therefore Sirdupla is not indicated for use in the treatment of patients with COPD.

Concomitant use of systemic ketoconazole significantly increases systemic exposure to salmeterol. This may lead to an increase in the incidence of systemic effects (e.g. prolongation in the QTc interval and palpitations). Concomitant treatment with ketoconazole or other potent CYP3A4 inhibitors should therefore be avoided unless the benefits outweigh the potentially increased risk of systemic side effects of salmeterol treatment (see section 4.5).

#### Paediatric population

Children and adolescents <16 years taking high doses of fluticasone propionate (typically ≥1,000 micrograms/day) may be at particular risk. Systemic effects may occur, particularly at high doses prescribed for long periods. Possible systemic effects include Cushing's syndrome, Cushingoid features, adrenal suppression, acute adrenal crisis and growth retardation in children and adolescents and more rarely, a range of psychological or behavioural effects including psychomotor hyperactivity, sleep disorders, anxiety, depression or aggression. Consideration should be given to referring the child or adolescent to a paediatric respiratory specialist.

It is recommended that the height of children receiving prolonged treatment with inhaled glucocorticosteroid is regularly monitored. **The dose of inhaled glucocorticosteroid should be reduced to the lowest dose at which effective control of asthma is maintained. To Note: Sirdupla is only available in two strengths; it is not available in a lower strength product containing salmeterol 25 microgram and fluticasone propionate 50 microgram, the strength which would be prescribed for use in children. Furthermore, the safety and efficacy of Sirdupla in children, 12 years and younger, and adolescents, 13-17 years of age, have not been established. No data are available. Sirdupla is not recommended for use in children and adolescents under 18 years of age at this time (see section 4.2).**

Sirdupla contains ethanol.

This medicinal product contains 0.73 mg of alcohol per inhalation which is equivalent to 12 mg/ml; the small amount in this medicinal product will not have any noticeable effect.

#### 4.5 Interaction with other medicinal products and other forms of interaction

$\beta$  adrenergic blockers may weaken or antagonise the effect of salmeterol. Both non-selective and selective  $\beta$  blockers should be avoided in patients with asthma, unless there are compelling reasons for their use. Potentially serious hypokalaemia may result from  $\beta_2$  agonist therapy. Particular caution is advised in acute severe asthma as this effect may be potentiated by concomitant treatment with xanthine derivatives, steroids and diuretics.

Concomitant use of other  $\beta$  adrenergic containing drugs can have a potentially additive effect.

##### Fluticasone propionate

Under normal circumstances, low plasma concentrations of fluticasone propionate are achieved after inhaled dosing, due to extensive first pass metabolism and high systemic clearance mediated by cytochrome P4503A4 in the gut and liver. Hence, clinically significant drug interactions mediated by fluticasone propionate are unlikely.

In an interaction study in healthy subjects with intranasal fluticasone propionate, ritonavir (a highly potent cytochrome P450 3A4 inhibitor) 100 mg twice daily increased the fluticasone propionate plasma concentrations several hundred fold, resulting in markedly reduced serum cortisol concentrations. Information about this interaction is lacking for inhaled fluticasone propionate, but a marked increase in fluticasone propionate plasma levels is expected. Cases of Cushing's syndrome and adrenal suppression have been reported. The combination should be avoided unless the benefit outweighs the increased risk of systemic glucocorticoid side effects.

In a small study in healthy volunteers, the slightly less potent CYP3A inhibitor ketoconazole increased the exposure of fluticasone propionate after a single inhalation by 150%. This resulted in a greater reduction of plasma cortisol as compared with fluticasone propionate alone. Co-treatment with other potent CYP3A inhibitors, such as itraconazole, cobicistat-containing products, and moderate CYP3A inhibitors, such as erythromycin, is also expected to increase the systemic fluticasone propionate exposure and the risk of systemic side effects. Combination should be avoided unless the benefit outweighs the potential increased risk of systemic corticosteroid side-effects, in which case patients should be monitored for systemic corticosteroid side-effects.

##### Salmeterol

###### Potent CYP3A4 inhibitors

Co-administration of ketoconazole (400 mg orally once daily) and salmeterol (50 micrograms inhaled twice daily) in 15 healthy subjects for 7 days resulted in a significant increase in plasma salmeterol exposure (1.4- fold  $C_{max}$  and 15-fold AUC). This may lead to an increase in the incidence of other systemic effects of salmeterol treatment (e.g. prolongation of QTc interval and palpitations) compared with salmeterol or ketoconazole treatment alone (see section 4.4).

Clinically significant effects were not seen on blood pressure, heart rate, blood glucose and blood potassium levels. Co-administration with ketoconazole did not increase the elimination half-life of salmeterol or increase salmeterol accumulation with repeat dosing.

The concomitant administration of ketoconazole should be avoided, unless the benefits outweigh the potentially increased risk of systemic side effects of salmeterol treatment. There is likely to be a similar risk of interaction with other potent CYP3A4 inhibitors (e.g. itraconazole, telithromycin, ritonavir).

###### Moderate CYP3A4 inhibitors

Co-administration of erythromycin (500 mg orally three times a day) and salmeterol (50 micrograms inhaled twice daily) in 15 healthy subjects for 6 days resulted in a small but non-statistically significant increase in salmeterol exposure (1.4-fold  $C_{max}$  and 1.2-fold AUC). Co-administration with erythromycin was not associated with any serious adverse effects.

#### 4.6 Fertility, pregnancy and lactation

##### Pregnancy

A large amount of data on pregnant women (more than 1000 pregnancy outcomes) indicates no malformative or foeto/neonatal toxicity related to salmeterol and fluticasone propionate. Animal studies have shown reproductive toxicity after administration of  $\beta_2$  adrenoreceptor agonists and glucocorticosteroids (see section 5.3).

Administration of Sirdupla to pregnant women should only be considered if the expected benefit to the mother is greater than any possible risk to the foetus.

The lowest effective dose of fluticasone propionate needed to maintain adequate asthma control should be used in the treatment of pregnant women.

##### Breast-feeding

It is unknown whether salmeterol and fluticasone propionate/metabolites are excreted in human milk.

Studies have shown that salmeterol and fluticasone propionate, and their metabolites, are excreted into the milk of lactating rats.

A risk to breastfed newborns/infants cannot be excluded. A decision must be made whether to discontinue breast-feeding or to discontinue Sirdupla therapy taking into account the benefit of breast-feeding for the child and the benefit of therapy for the woman.

##### Fertility

There are no data in humans. However, animal studies showed no effects of salmeterol or fluticasone propionate on fertility.

#### 4.7 Effects on ability to drive and use machines

Sirdupla has no or negligible influence on the ability to drive and use machines.

#### 4.8 Undesirable effects

As Sirdupla contains salmeterol and fluticasone propionate, the type and severity of adverse reactions associated with each of the compounds may be expected. There is no incidence of additional adverse events following concurrent administration of the two compounds.

Adverse events which have been associated with salmeterol/fluticasone propionate are given below, listed by system organ class and frequency. Frequencies are defined as: very common ( $\geq 1/10$ ), common ( $\geq 1/100$  to  $< 1/10$ ), uncommon ( $\geq 1/1,000$  to  $< 1/100$ ), rare ( $\geq 1/10,000$  to  $< 1/1,000$ ) and not known (cannot be estimated from the available data). Frequencies were derived from clinical trial data. The incidence in placebo was not taken into account.

System Organ Class	Adverse Event	Frequency
Infections and infestations	Candidiasis of the mouth and throat	Common
	Pneumonia	Common <sup>1,3</sup>
	Bronchitis	Common <sup>1,3</sup>
	Oesophageal candidiasis	Rare
Immune system disorders	Hypersensitivity reactions with the following manifestations:	Uncommon
	Cutaneous hypersensitivity reactions	

	Angioedema (mainly facial and oropharyngeal oedema)	Rare
	Respiratory symptoms (dyspnoea)	Uncommon
	Respiratory symptoms (bronchospasm)	Rare
	Anaphylactic reactions including anaphylactic shock	Rare
Endocrine disorders	Cushing's syndrome, Cushingoid features, adrenal suppression, growth retardation in children and adolescents, decreased bone mineral density	Rare <sup>4</sup>
Metabolism and nutrition disorders	Hypokalaemia	Common <sup>3</sup>
	Hyperglycaemia	Uncommon <sup>4</sup>
Psychiatric disorders	Anxiety	Uncommon
	Sleep disorders	Uncommon
	Behavioural changes, including psychomotor hyperactivity and irritability (predominantly in children)	Rare
	Depression, aggression (predominantly in children)	Not known
Nervous system disorders	Headache	Very common <sup>1</sup>
	Tremor	Uncommon
Eye disorders	Cataract	Uncommon
	Glaucoma	Rare <sup>4</sup>
	Blurred vision (see section 4.4)	Not known
Cardiac disorders	Palpitations	Uncommon
	Tachycardia	Uncommon
	Cardiac arrhythmias (including, supraventricular tachycardia and extrasystoles)	Rare
	Atrial fibrillation	Uncommon
	Angina pectoris	Uncommon
Respiratory, thoracic and mediastinal disorders	Nasopharyngitis	Very common <sup>2,3</sup>
	Throat irritation	Common
	Hoarseness/dysphonia	Common
	Sinusitis	Common <sup>1,3</sup>
	Paradoxical bronchospasm	Rare <sup>4</sup>
Skin and subcutaneous tissue disorders	Contusions	Common <sup>1,3</sup>
Musculoskeletal and connective tissue disorders	Muscle cramps	Common
	Traumatic fractures	Common <sup>1,3</sup>
	Arthralgia	Common

- <sup>1</sup>. Reported commonly in placebo
- <sup>2</sup>. Reported very commonly in placebo
- <sup>3</sup>. Reported over 3 years in a COPD study
- <sup>4</sup>. See section 4.4

#### Description of selected adverse reactions

The pharmacological side effects of  $\beta_2$  agonist treatment, such as tremor, palpitations and headache, have been reported, but tend to be transient and reduce with regular therapy.

As with other inhalation therapy paradoxical bronchospasm may occur with an immediate increase in wheezing and shortness of breath after dosing. Paradoxical bronchospasm responds to a rapid-acting bronchodilator and should be treated straightaway. Sirdupla should be discontinued immediately, the patient assessed and alternative therapy instituted if necessary.

Due to the fluticasone propionate component, hoarseness and candidiasis (thrush) of the mouth and throat and, rarely, of the oesophagus can occur in some patients. Both hoarseness and incidence of mouth and throat candidiasis may be relieved by rinsing the mouth with water and/or brushing the teeth after using the product. Symptomatic mouth and throat candidiasis can be treated with topical anti-fungal therapy whilst still continuing with Sirdupla.

#### Paediatric population

Possible systemic effects include Cushing's syndrome, Cushingoid features, adrenal suppression and growth retardation in children and adolescents (see section 4.4). Children may also experience anxiety, sleep disorders and behavioural changes, including hyperactivity and irritability.

#### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via HPRRA Pharmacovigilance website: [www.hpra.ie](http://www.hpra.ie).

### **4.9 Overdose**

There are no data available from clinical trials on overdose with salmeterol/fluticasone propionate, however data on overdose with both drugs are given below:

#### Salmeterol

The signs and symptoms of salmeterol overdose are dizziness, increases in systolic blood pressure, tremor, headache and tachycardia. If Sirdupla therapy has to be withdrawn due to overdose of the  $\beta$  agonist component of the drug, provision of appropriate replacement steroid therapy should be considered. Additionally, hypokalaemia can occur and therefore serum potassium levels should be monitored. Potassium replacement should be considered.

#### Fluticasone propionate

**Acute:** Acute inhalation of fluticasone propionate doses in excess of those recommended may lead to temporary suppression of adrenal function. This does not need emergency action as adrenal function is recovered in a few days, as verified by plasma cortisol measurements.

**Chronic overdose of inhaled fluticasone propionate:** Adrenal reserve should be monitored and treatment with a systemic glucocorticosteroid may be necessary. When stabilised, treatment should be continued with an inhaled glucocorticosteroid at the recommended dose (see section 4.4).

In cases of both acute and chronic fluticasone propionate overdose, Sirdupla therapy should be continued at a suitable dosage for symptom control.

## **5 PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic Group:

Drugs for obstructive airway diseases, adrenergics in combination with corticosteroids or other drugs, excl. anticholinergics, ATC code: R03AK06.

#### Mechanism of action and pharmacodynamic effects

Sirdupla contains salmeterol and fluticasone propionate which have differing modes of action. The respective mechanisms of action of both drugs are discussed below.

#### *Salmeterol:*

Salmeterol is a selective long-acting (12 hour)  $\beta_2$  adrenoceptor agonist with a long side chain which binds to the exo-site of the receptor.

Salmeterol produces a longer duration of bronchodilation, lasting for at least 12 hours, than recommended doses of conventional short-acting  $\beta_2$  agonists.

#### *Fluticasone propionate:*

Fluticasone propionate given by inhalation at recommended doses has a glucocorticoid anti-inflammatory action within the lungs, resulting in reduced symptoms and exacerbations of asthma, with less adverse effects than when glucocorticosteroids are administered systemically.

#### Clinical efficacy and safety

#### *Salmeterol/fluticasone propionate Asthma clinical trials*

A twelve month study (Gaining Optimal Asthma Control, GOAL), in 3416 adult and adolescent patients with persistent asthma, compared the safety and efficacy of salmeterol/fluticasone propionate versus inhaled glucocorticosteroid (fluticasone propionate) alone to determine whether the goals of asthma management were achievable. Treatment was stepped up every 12 weeks until **\*\*total control** was achieved or the highest dose of study drug was reached. GOAL showed more patients treated with salmeterol/fluticasone propionate achieved asthma control than patients treated with ICS alone and this control was attained at a lower glucocorticosteroid dose.

*\*Well controlled* asthma was achieved more rapidly with salmeterol/fluticasone propionate than with ICS alone. The time on treatment for 50% of subjects to achieve a first individual *well controlled* week was 16 days for salmeterol/fluticasone propionate compared to 37 days for the ICS group. In the subset of steroid naive asthmatics the time to an individual *well controlled* week was 16 days in the salmeterol/fluticasone propionate treatment compared to 23 days following treatment with ICS.

The overall study results showed:

Percentage of Patients Attaining <b>*Well Controlled (WC)</b> and <b>**Totally Controlled (TC)</b> Asthma over 12 months	Salmeterol/FP	FP		
			WC	TC
<b>Pre-Study Treatment</b>				
	<b>WC</b>	<b>TC</b>	<b>WC</b>	<b>TC</b>
<b>No ICS</b> (SABA alone)	78%	50%	70%	40%
<b>Low dose ICS</b> ( $\leq 500$ microgram BDP or equivalent/day)	75%	44%	60%	28%
<b>Medium dose ICS</b> ( $> 500$ to 1000 micrograms BDP or equivalent/day)	62%	29%	47%	16%
<b>Pooled results across the 3 treatment levels</b>	71%	41%	59%	28%

*\*Well controlled* asthma; less than or equal to 2 days with symptom score greater than 1 (symptom score 1 defined as 'symptoms for one short period during the day'), SABA use on less than or equal to 2 days and less than or equal to 4 occasions/week, greater than or equal to 80% predicted morning peak expiratory flow, no night-time awakenings, no exacerbations and no side effects enforcing a change in therapy.

\*\*Total control of asthma; no symptoms, no SABA use, greater than or equal to 80% predicted morning peak expiratory flow, no night-time awakenings, no exacerbations and no side effects enforcing a change in therapy.

The results of this study suggest that salmeterol/fluticasone propionate 50/100 micrograms twice daily (bd) may be considered as initial maintenance therapy in patients with moderate persistent asthma for whom rapid control of asthma is deemed essential (see section 4.2).

A double-blind, randomised, parallel group study in 318 patients with persistent asthma aged  $\geq 18$  years evaluated the safety and tolerability of administering two inhalations twice daily (double dose) of salmeterol/fluticasone propionate for two weeks. The study showed that doubling the inhalations of each strength of salmeterol/fluticasone propionate for up to 14 days resulted in a small increase in  $\beta$  agonist-related adverse events (tremor; 1 patient [1%] vs 0, palpitations; 6 [3%] vs 1 [ $<1\%$ ], muscle cramps; 6[3%] vs 1 [ $<1\%$ ]) and a similar incidence of inhaled glucocorticosteroid-related adverse events (e.g. oral candidiasis; 6 [6%] vs 16 [8%], hoarseness; 2 [2%] vs 4 [2%]) compared to one inhalation twice daily. The small increase in  $\beta$  agonist-related adverse events should be taken into account if doubling the dose of salmeterol/fluticasone propionate is considered by the physician in adult patients requiring additional short-term (up to 14 days) inhaled glucocorticosteroid therapy.

## Asthma

### *The Salmeterol Multi-center Asthma Research Trial (SMART)*

The Salmeterol Multi-center Asthma Research Trial (SMART) was a 28-week US study that evaluated the safety of salmeterol compared to placebo added to usual therapy in adult and adolescent subjects. Although there were no significant differences in the primary endpoint of the combined number of respiratory-related deaths and respiratory-related life-threatening experiences, the study showed a significant increase in asthma-related deaths in patients receiving salmeterol (13 deaths out of 13,176 patients treated with salmeterol versus 3 deaths out of 13,179 patients on placebo). The study was not designed to assess the impact of concurrent inhaled corticosteroid use and only 47 % of subjects reported ICS use at baseline.

### *Safety and efficacy of salmeterol-FP versus FP alone in asthma*

Two multi-centre 26-week studies were conducted to compare the safety and efficacy of salmeterol-FP versus FP alone, one in adult and adolescent subjects (AUSTRI trial), and the other in paediatric subjects 4-11 years of age (VESTRI trial). For both studies, enrolled subjects had moderate to severe persistent asthma with history of asthma-related hospitalisation or asthma exacerbation in the previous year. The primary objective of each study was to determine whether the addition of LABA to ICS therapy (salmeterol-FP) was non-inferior to ICS (FP) alone in terms of the risk of serious asthma related events (asthma-related hospitalisation, endotracheal intubation, and death). A secondary efficacy objective of these studies was to evaluate whether ICS/LABA (salmeterol-FP) was superior to ICS therapy alone (FP) in terms of severe asthma exacerbation (defined as deterioration of asthma requiring the use of systemic corticosteroids for at least 3 days or an in-patient hospitalisation or emergency department visit due to asthma that required systemic corticosteroids).

A total of 11,679 and 6,208 subjects were randomized and received treatment in the AUSTRI and VESTRI trials, respectively. For the primary safety endpoint, non-inferiority was achieved for both trials (see Table below).

### Serious Asthma-Related Events in the 26-Week AUSTRI and VESTRI Trials

	AUSTRI		VESTRI	
	Salmeterol -FP (n = 5,834)	FP Alone (n = 5,845)	Salmeterol -FP (n = 3,107)	FP Alone (n = 3,101)
Composite endpoint (Asthma-related hospitalisation, endotracheal intubation, or death)	34 (0.6%)	33 (0.6%)	27 (0.9%)	21 (0.7%)
Salmeterol-FP/FP Hazard ratio (95% CI)	1.029 (0.638-1.66 2) <sup>a</sup>		1.285 (0.726-2.27 2) <sup>b</sup>	
Death	0	0	0	0
Asthma-related hospitalisation	34	33	27	21
Endotracheal intubation	0	2	0	0

<sup>a</sup> If the resulting upper 95% CI estimate for the relative risk was less than 2.0, then non-inferiority was concluded.

<sup>b</sup> If the resulting upper 95% CI estimate for the relative risk was less than 2.675, then non-inferiority was concluded.

For the secondary efficacy endpoint, reduction in time to first asthma exacerbation for salmeterol-FP relative to FP was seen in both studies, however only AUSTRI met statistical significance:

	AUSTRI		VESTRI	
	Salmeterol -FP (n = 5,834)	FP Alone (n = 5,845)	Salmeterol -FP (n = 3,107)	FP Alone (n = 3,101)
Number of subjects with an asthma exacerbation	480 (8%)	597 (10%)	265 (9%)	309 (10%)
Salmeterol-FP/FP Hazard ratio (95% CI)	0.787 (0.698, 0.888)		0.859 (0.729, 1.012)	

#### Paediatric population

In trial SAM101667, in 158 children aged 6 to 16 years with symptomatic asthma, the combination of salmeterol/fluticasone propionate is equally efficacious to doubling the dose of fluticasone propionate regarding symptom control and lung function. This study was not designed to investigate the effect on exacerbations.

In a trial which randomised children aged 4 to 11 years [n=428], salmeterol/fluticasone propionate Diskus® (50/100 microgram, one inhalation twice daily) was compared with salmeterol/fluticasone propionate MDI (25/50 microgram, two inhalations twice daily) over a 12-week treatment period. The adjusted mean change from baseline in mean morning peak expiratory flow over Weeks 1-12 was 37.7L/min in the Diskus® group and 38.6L/min in the MDI group. Improvements were also seen in both treatment groups on rescue and symptom free days and nights.

#### Fluticasone propionate containing medications in asthma during pregnancy

An observational retrospective epidemiological cohort study utilising electronic health records from the United Kingdom was conducted to evaluate the risk of MCMs following first trimester exposure to inhaled FP alone and salmeterol-FP relative to non-FP containing ICS. No placebo comparator was included in this study.

Within the asthma cohort of 5362 first trimester ICS-exposed pregnancies, 131 diagnosed MCMs were identified; 1612 (30%) were exposed to FP or salmeterol-FP of which 42 diagnosed MCMs were identified. The adjusted odds ratio for MCMs diagnosed by 1 year was 1.1 (95%CI: 0.5 – 2.3) for FP exposed vs non-FP ICS exposed women with moderate asthma and 1.2 (95%CI: 0.7 – 2.0) for women with considerable to severe asthma. No difference in the risk of MCMs was identified following first trimester exposure to FP alone versus salmeterol-FP. Absolute risks of MCM across the asthma severity strata ranged from 2.0 to 2.9 per 100 FP-exposed pregnancies which is comparable to results from a study of 15,840 pregnancies unexposed to asthma therapies in the General Practice Research Database (2.8 MCM events per 100 pregnancies).

A multi-centre 8-week, double-blind, study was conducted to evaluate the safety and efficacy of salmeterol-FP metered dose inhaler (25/50 micrograms, 1 or 2 inhalations twice daily) versus FP (50 micrograms, 1 or 2 inhalations twice daily) alone in Japanese paediatric patients (6-month to 4 years of age) with infantile bronchial asthma. Ninety-nine percent (148/150) and ninety-five percent (142/150) of patients randomised to receive salmeterol-FP or FP alone, respectively, completed the double-blind period of the study. The safety of long-term treatment with salmeterol-FP metered dose inhaler (25/50 micrograms, 1 or 2 inhalations twice daily) was evaluated in a 16-week, open-label, extension treatment period. Ninety-three percent (268/288) completed the extension period. The study failed to meet its primary efficacy endpoint of mean change from baseline in total asthma symptom score (double blind period). No statistically significant superiority in favour of salmeterol-FP to FP was demonstrated (95% CI [-2.47; 0.54], p=0.206). No clinically significant differences were noted in the safety profile between salmeterol-FP and FP alone (8-week double-blind period); moreover, no new safety signals were identified with administration of salmeterol-FP in the 16-week open-label extension period. However, the data about efficacy and safety of salmeterol-FP are insufficient to establish the benefit/risk balance of salmeterol-FP in children under 4 years old.

#### Fluticasone propionate containing medications in asthma during pregnancy

An observational retrospective epidemiological cohort study utilising electronic health records from the United Kingdom was conducted to evaluate the risk of MCMs following first trimester exposure to inhaled FP alone and salmeterol-FP relative to non-FP containing ICS. No placebo comparator was included in this study.

Within the asthma cohort of 5362 first trimester ICS-exposed pregnancies, 131 diagnosed MCMs were identified; 1612 (30%) were exposed to FP or salmeterol-FP of which 42 diagnosed MCMs were identified. The adjusted odds ratio for MCMs diagnosed by 1 year was 1.1 (95%CI: 0.5 – 2.3) for FP exposed vs non-FP ICS exposed women with moderate asthma and 1.2 (95%CI: 0.7 – 2.0) for women with considerable to severe asthma. No difference in the risk of MCMs was identified following first trimester exposure to FP alone versus salmeterol-FP. Absolute risks of MCM across the asthma severity strata ranged from

2.0 to 2.9 per 100 FP-exposed pregnancies which is comparable to results from a study of 15,840 pregnancies unexposed to asthma therapies in the General Practice Research Database (2.8 MCM events per 100 pregnancies).

## 5.2 Pharmacokinetic properties

When salmeterol and fluticasone propionate were administered in combination by the inhaled route, the pharmacokinetics of each component were similar to those observed when the drugs were administered separately. For pharmacokinetic purposes therefore each component can be considered separately.

### Salmeterol

Salmeterol acts locally in the lung therefore plasma levels are not an indication of therapeutic effects. In addition, there are only limited data available on the pharmacokinetics of salmeterol because of the technical difficulty of assaying the drug in plasma due to the low plasma concentrations at therapeutic doses (approximately 200 picogram/mL or less) achieved after inhaled dosing.

### Fluticasone propionate

The absolute bioavailability of a single dose of inhaled fluticasone propionate in healthy subjects varies between approximately 5 to 11% of the nominal dose depending on the inhalation device used. In patients with asthma a lesser degree of systemic exposure to inhaled fluticasone propionate has been observed.

Systemic absorption occurs mainly through the lungs and is initially rapid then prolonged. The remainder of the inhaled dose may be swallowed but contributes minimally to systemic exposure due to the low aqueous solubility and pre-systemic metabolism, resulting in oral availability of less than 1%. There is a linear increase in systemic exposure with increasing inhaled dose.

The disposition of fluticasone propionate is characterised by high plasma clearance (1150 mL/min), a large volume of distribution at steady-state (approximately 300 L) and a terminal half-life of approximately 8 hours.

Plasma protein binding is 91%.

Fluticasone propionate is cleared very rapidly from the systemic circulation. The main pathway is metabolism to an inactive carboxylic acid metabolite, by the cytochrome P450 enzyme CYP3A4. Other unidentified metabolites are also found in the faeces.

The renal clearance of fluticasone propionate is negligible. Less than 5% of the dose is excreted in urine, mainly as metabolites. The main part of the dose is excreted in faeces as metabolites and unchanged drug.

### Paediatric population

The effect of 21 days of treatment with salmeterol/fluticasone propionate inhaler 25/50 microgram (2 inhalations twice daily with or without a spacer) or salmeterol/fluticasone propionate Diskus® 50/100 micrograms (1 inhalation twice daily) was evaluated in 31 children aged 4 to 11 years with mild asthma. Systemic exposure to fluticasone propionate was similar for salmeterol/fluticasone propionate inhaler with spacer (107 pg hr/mL [95% CI: 45.7, 252.2]) and salmeterol/fluticasone propionate Diskus® (138 pg hr/mL [95% CI: 69.3, 273.2]), but lower for salmeterol/fluticasone propionate inhaler (24 pg hr/mL [95% CI: 9.6, 60.2]). Systemic exposure to salmeterol was similar for salmeterol/fluticasone propionate inhaler, salmeterol/fluticasone propionate inhaler with spacer, and salmeterol/fluticasone propionate Diskus® (126 pg hr/mL [95% CI: 70, 225], 103 pg hr/mL [95% CI: 54, 200], and 110 pg hr/mL [95% CI: 55, 219], respectively).

## 5.3 Preclinical safety data

The only safety concerns for human use derived from animal studies of salmeterol and fluticasone propionate given separately were effects associated with exaggerated pharmacological actions.

In animal reproduction studies, glucocorticosteroids have been shown to induce malformations (cleft palate, skeletal malformations). However, these animal experimental results do not seem to be relevant for man given recommended doses. Animal studies with salmeterol have shown embryofoetal toxicity only at high exposure levels. Following co-administration, increased incidences of transposed umbilical artery and incomplete ossification of occipital bone were found in rats at doses associated with known glucocorticoid-induced abnormalities. Neither salmeterol xinafoate or fluticasone propionate have shown any potential for genetic toxicity.

The non-CFC propellant, norflurane, has been shown to have no toxic effect at very high vapour concentrations, far in excess of those likely to be experienced by patients, in a wide range of animal species exposed daily for periods of two years.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Propellant:  
Norflurane (HFA134a)  
Ethanol, anhydrous

### **6.2 Incompatibilities**

Not applicable.

### **6.3 Shelf life**

2 years.

### **6.4 Special precautions for storage**

Do not store above 25°C.

The canister contains a pressurised liquid. Do not expose to temperatures higher than 50°C, protect from direct sunlight. Do not pierce or burn the canister even when empty.

As with most inhaled medicinal products in pressurised canisters, the therapeutic effect of this medicinal product may decrease when the canister is cold.

### **6.5 Nature and contents of container**

The suspension is contained in an internally coated with fluorinated ethylene/propylene copolymer (FEP), 16 mL aluminium alloy pressurised canister sealed with a metering valve. The canisters are fitted into white plastic actuators incorporating an atomising mouthpiece and fitted with mauve or burgundy dustcaps. The actuator has an integrated dose counter attached to it, which shows how many metered doses of medicine are left. The number shows through a window in the back of the plastic actuator. One pressurised canister delivers 120 metered doses.

The devices are available in cardboard containers, which hold:  
1x120 metered doses inhaler

### **6.6 Special precautions for disposal and other handling**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## **7 MARKETING AUTHORISATION HOLDER**

Viatrix Limited  
Damastown Industrial Park  
Mulhuddart  
Dublin 15  
Dublin  
Ireland

## **8 MARKETING AUTHORISATION NUMBER**

PA23266/020/002

## **9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

15 March 2024

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Date of first authorisation: 3<sup>rd</sup> February 2017

Date of last renewal: 27<sup>th</sup> April 2020

**10 DATE OF REVISION OF THE TEXT**

March 2024