

SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Stalpex 50 microgram/500 microgram/dose inhalation powder, pre-dispensed

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each single inhalation provides a delivered dose (the dose leaving the mouthpiece) of 47 micrograms of salmeterol (as salmeterol xinafoate) and 460 micrograms of fluticasone propionate. This corresponds to a pre-dispensed dose of 50 micrograms of salmeterol (as salmeterol xinafoate) and 500 micrograms fluticasone propionate.

Excipient(s) with known effect:

Each dose contains lactose up to 12.9 milligram.

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Inhalation powder, pre-dispensed.

Molded plastic inhaler containing a foil strip with 60 regularly placed blisters.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Asthma

Stalpex is indicated for use in patients with severe asthma 12 years of age and older only.

Stalpex is indicated in the regular treatment of patients with **severe** asthma where use of a combination product (long-acting β_2 agonist and inhaled corticosteroid) is appropriate:

- patients not adequately controlled on a lower strength corticosteroid combination product
- or
- patients already adequately controlled on an inhaled corticosteroid in a high strength and a long-acting β_2 agonist.

Chronic Obstructive Pulmonary Disease (COPD)

Stalpex is indicated for the symptomatic treatment of patients with COPD, with a FEV₁ <60% predicted normal (pre-bronchodilator) and a history of repeated exacerbations, who have significant symptoms despite regular bronchodilator therapy.

4.2 Posology and method of administration

Stalpex is indicated in adults and adolescents 12 years of age and older only. Stalpex is not indicated for use in children younger than 12 years of age.

Posology

Route of administration: Inhalation use.

Patients should be made aware that Stalpex must be used daily for optimum benefit, even when asymptomatic.

Patients should be regularly reassessed by a doctor, so that the strength of Stalpex they are receiving remains optimal and is changed on medical advice. **The dose should be titrated to the lowest dose at which effective control of symptoms is maintained.**

Note: Stalpex is only available in one strength i.e. Salmeterol/Fluticasone 50 mcg /500 mcg. It is not available in the two lower strengths (i.e. salmeterol/fluticasone 50/250 and 50/100 mcg).

These strengths are available for other similar fixed-dose combination DPI products containing these two actives and currently available on the market. Therefore, when it is appropriate to titrate down to a lower strength not available for Stalpex a change to an alternative fixed-dose combination of salmeterol and fluticasone propionate containing a lower dose of the inhaled corticosteroid is required.

Stalpex should not be used for patients with mild or moderate asthma, in whom a low dose of the inhaled corticosteroid, either alone or with a long-acting β_2 agonist, may be required.

Patients should be given the strength of the combination product containing the appropriate fluticasone propionate dosage for the severity of their disease. Stalpex is appropriate for use in treatment of patients with severe asthma. If an individual patient should require dosages outside the recommended regimen, appropriate doses of β_2 agonist and/or corticosteroid should be prescribed.

Recommended Doses:

Asthma

Adults and adolescents 12 years and older:

One inhalation of 50 micrograms salmeterol and 500 micrograms fluticasone propionate twice daily.

Once control of asthma is attained, treatment should be reviewed, and consideration given as to whether patients should be stepped down to a lower dose inhaled corticosteroid/ LABA combination or ICS alone.

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 corticosteroids remain the first line treatment for most patients. Stalpex is not intended for the initial management of mild or moderate asthma.

Stalpex is for the treatment of patients with severe asthma only. It should not be used for the treatment of patients with mild or moderate asthma or for the initiation of treatment for patients with severe asthma unless the requirement for such a high dose of the corticosteroid together with a long-acting β_2 agonist has been established previously.

Stalpex is not intended as the treatment of asthma when a fixed-dose combination of salmeterol and fluticasone propionate is required for the first time. Patients should commence treatment with a fixed-dose combination containing a lower dose of the corticosteroid component and will then be titrated up in respect of the corticosteroid dose until control of asthma is achieved. Once control of asthma is achieved patients should be reviewed regularly and the dose of inhaled corticosteroid titrated downwards as appropriate to maintain disease control.

Paediatric population

Children:

Limited data are available. No recommendation on a posology can be made for children under 12 years of age.

COPD

Adults:

- One inhalation of 50 micrograms salmeterol and 500 micrograms fluticasone propionate twice daily.

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 Stalpex in patients with hepatic impairment.

Using the inhaler device

The device is opened and primed by sliding the lever. The mouthpiece is then placed in the mouth and the lips closed round it. The dose can then be inhaled and the device closed.

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

Deterioration of disease

Stalpex is for use in patients with severe asthma only. It 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 Stalpex 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 Stalpex . Patients should be asked to continue treatment but to seek medical advice if asthma symptoms remain uncontrolled or worsen after initiation on Stalpex .

Increased requirements for use of reliever medication (short-acting bronchodilators), or decreased response to reliever medication indicate deterioration of 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 corticosteroid therapy.

Once asthma symptoms are controlled, consideration may be given to gradually reducing the dose of the inhaled corticosteroid and therefore a change to an alternative fixed-dose combination of salmeterol and fluticasone propionate containing a lower dose of the inhaled corticosteroid is required. Regular review of patients as treatment is stepped down is important. The lowest dose of inhaled corticosteroid should be used.

For patients with COPD experiencing exacerbations, treatment with systemic corticosteroids is typically indicated, therefore patients should be instructed to seek medical attention if symptoms deteriorate with Stalpex .

Treatment with Stalpex should not be stopped abruptly in patients with asthma due to risk of exacerbation. Therapy should be down-titrated under physician supervision. For patients with COPD cessation of therapy may also be associated with symptomatic decompensation and should be supervised by a physician.

As with all inhaled medication containing corticosteroids, Stalpex 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.

Cardiovascular effects

Rarely, Stalpex may cause cardiac arrhythmias e.g. supraventricular tachycardia, extrasystoles and atrial fibrillation, and a mild transient reduction in serum potassium at high therapeutic doses. Stalpex 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.

Hyperglycaemia

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.

Paradoxical bronchospasm

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. Stalpex should be discontinued immediately, the patient assessed and alternative therapy instituted if necessary.

The pharmacological side effects of β_2 agonist treatment, such as tremor, palpitations and headache, have been reported, but tend to be transient and reduce with regular therapy.

Excipients

Stalpex contains lactose up to 12.9 milligram /dose. This amount does not normally cause problems in lactose intolerant people.

Systemic corticosteroid effects

Systemic effects may occur with any inhaled corticosteroid, particularly at high doses prescribed for long periods. These effects are much less likely to occur than with oral corticosteroids. 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 adolescents) (see *Paediatric population* sub-heading below for information on the systemic effects of inhaled corticosteroids in adolescents). **It is important, therefore, that the patient is reviewed regularly and the dose of inhaled corticosteroid is reduced to the lowest dose at which effective control of asthma is maintained.**

Prolonged treatment of patients with high doses of inhaled corticosteroids 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 corticosteroid cover should be considered during periods of stress or elective surgery.

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 corticosteroid 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 corticosteroid 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 corticosteroid 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).

Pneumonia in patients with COPD

An increase in the incidence of pneumonia, including pneumonia requiring hospitalisation, has been observed in patients with COPD receiving inhaled corticosteroids. There is some evidence of an increased risk of pneumonia with increasing steroid dose but this has not been demonstrated conclusively across all studies.

There is no conclusive clinical evidence for intra-class differences in the magnitude of the pneumonia risk among inhaled corticosteroid products. Physicians should remain vigilant for the possible development of pneumonia in patients with COPD as the clinical features of such infections overlap with the symptoms of COPD exacerbations.

Risk factors for pneumonia in patients with COPD include current smoking, older age, low body mass index (BMI) and severe COPD.

Interactions with potent CYP3A4 inhibitors

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).

Visual disturbance

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.

Paediatric population

Adolescents <16 years taking high doses of fluticasone propionate (typically \geq 1000 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 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 adolescent to a paediatric respiratory specialist.

It is recommended that the height of adolescents receiving prolonged treatment with inhaled corticosteroid is regularly monitored. **The dose of inhaled corticosteroid should be reduced to the lowest dose at which effective control of asthma is maintained.**

4.5 Interaction with other medicinal products and other forms of interaction

β adrenergic blockers may weaken or antagonise the effect of salmeterol. Both non-selective and selective β blockers should be avoided unless there are compelling reasons for their use. Potentially serious hypokalaemia may result from β_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 β 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 CYP3A4 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 CYP3A4 inhibitor) 100 mg b.i.d. 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 and 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. Combinations 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 CYP 3A4 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 feto/neonatal toxicity related to salmeterol and fluticasone propionate. Animal studies have shown

reproductive toxicity after administration of β_2 adrenoreceptor agonists and glucocorticosteroids (see section 5.3).

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

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

Breastfeeding

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 breastfeeding or to discontinue Stalpex therapy taking into account the benefit of breastfeeding 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

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

4.8 Undesirable effects

As Stalpex 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 ($\geq 1/1000$ to $< 1/100$), rare ($\geq 1/10,000$ to $< 1/1000$) 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 & Infestations | Candidiasis of the mouth and throat | Common |
| | Pneumonia (in COPD patients) | Common ^{1, 3, 5} |
| | Bronchitis | Common ^{1, 3} |

| | | |
|---|---|--|
| | Oesophageal candidiasis | Rare |
| Immune System Disorders | Hypersensitivity reactions with the following manifestations: Cutaneous hypersensitivity reactions Angioedema (mainly facial and oropharyngeal oedema) Respiratory symptoms (dyspnoea) Respiratory symptoms (bronchospasm) Anaphylactic reactions including anaphylactic shock | Uncommon Rare Uncommon Rare Rare |
| Endocrine Disorders | Cushing's syndrome, Cushingoid features, Adrenal suppression, Growth retardation in adolescents, Decreased bone mineral density | Rare ⁴ |
| Metabolism & Nutrition Disorders | Hypokalaemia Hyperglycaemia | Common ³ Uncommon ⁴ |
| Psychiatric Disorders | Anxiety Sleep disorders Behavioural changes, including psychomotor hyperactivity and irritability (predominantly in adolescents) Depression, aggression (predominantly in adolescents) | Uncommon Uncommon Rare Not Known |
| Nervous System Disorders | Headache Tremor | Very Common ¹ Uncommon |
| Eye Disorders | Cataract Glaucoma Vision, blurred | Uncommon Rare ⁴ Not known ⁴ |
| Cardiac Disorders | Palpitations Tachycardia Cardiac arrhythmias (including supraventricular tachycardia and extrasystoles). Atrial fibrillation Angina pectoris | Uncommon Uncommon Rare Uncommon Uncommon |
| Respiratory, Thoracic & Mediastinal Disorders | Nasopharyngitis Throat irritation Hoarseness/dysphonia Sinusitis Paradoxical bronchospasm | Very Common ^{2, 3} Common Common Common ^{1, 3} Rare ⁴ |
| Skin and subcutaneous tissue disorders | Contusions | Common ^{1, 3} |
| Musculoskeletal & Connective Tissue | Muscle cramps Traumatic fractures | Common Common ^{1, 3} |

| | | |
|-----------|------------|--------|
| Disorders | Arthralgia | Common |
| | Myalgia | Common |

¹ Reported commonly in placebo

² Reported very commonly in placebo

³ Reported over 3 years in a COPD study

⁴ See section 4.4

⁵ See section 5.1.

Description of selected adverse reactions

The pharmacological side effects of β_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. Stalplex 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 the Salmeterol/Fluticasone APC.

Paediatric population

Possible systemic effects include Cushing's syndrome, Cushingoid features, adrenal suppression and growth retardation in adolescents (see section 4.4). Adolescents 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 the Yellow Card Scheme

Website: www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store.

4.9 Overdose

There are no data available from clinical trials on overdose with Salmeterol/Fluticasone APC, however data on overdose with both drugs are given below:

The signs and symptoms of salmeterol overdose are dizziness, increases in systolic blood pressure, tremor, headache and tachycardia. If Stalpex therapy has to be withdrawn due to overdose of the β 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.

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 corticosteroid may be necessary. When stabilised, treatment should be continued with an inhaled corticosteroid at the recommended dose. Refer to section 4.4: risk of adrenal suppression.

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

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Adrenergics in combination with corticosteroids or other drugs, excl. Anticholinergics, ATC Code: R03AK06

Mechanism of action and pharmacodynamic effects

Stalpex 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) β_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 β_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 corticosteroids are administered systemically.

Clinical efficacy and safety

Salmeterol and 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 and fluticasone propionate versus inhaled corticosteroid (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 and fluticasone propionate achieved asthma control than patients treated with ICS alone and this control was attained at a lower corticosteroid dose.

***Well controlled** asthma was achieved more rapidly with salmeterol and 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 and 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 and fluticasone propionate treatment compared to 23 days following treatment with ICS.

The overall study results showed:

| Percentage of Patients Attaining *Well Controlled (WC) and **Totally Controlled (TC) Asthma over 12 months | | | | |
|---|----------------------|-----------|-----------|-----------|
| Pre-Study Treatment | Salmeterol/FP | | FP | |
| | WC | TC | WC | TC |
| No ICS (SABA alone) | 78% | 50% | 70% | 40% |
| Low dose ICS (≤500 micrograms BDP or equivalent/day) | 75% | 44% | 60% | 28% |
| Medium dose ICS (>500 to 1000 micrograms BDP or equivalent/day) | 62% | 29% | 47% | 16% |
| Pooled results across the 3 treatment levels | 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 and fluticasone propionate 50/100 micrograms 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 ≥ 18 years evaluated the safety and tolerability of administering two inhalations twice daily (double dose) of salmeterol and fluticasone propionate for two weeks. The study showed that doubling the inhalations of each strength of salmeterol and fluticasone propionate for up to 14 days resulted in a small increase in β 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 corticosteroid-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 β agonist-related adverse events should be taken into account if doubling the dose of salmeterol and fluticasone propionate is considered by the physician in adult patients requiring additional short-term (up to 14 days) inhaled corticosteroid therapy.

Salmeterol and fluticasone propionate COPD clinical trials

TORCH was a 3-year study to assess the effect of treatment with salmeterol and fluticasone propionate inhaler 50/500 micrograms bd, salmeterol inhaler 50 micrograms bd, fluticasone propionate (FP) inhaler 500 micrograms bd or placebo on all-cause mortality in patients with COPD. COPD patients with a baseline (pre-bronchodilator) FEV₁ $<60\%$ of predicted normal were randomised to double-blind medication. During the study, patients were permitted usual COPD therapy with the exception of other inhaled corticosteroids, long-acting bronchodilators and long-term systemic corticosteroids. Survival status at 3 years was determined for all patients regardless of withdrawal from study medication. The primary endpoint was reduction in all cause mortality at 3 years for salmeterol and fluticasone propionate vs Placebo.

| | Placebo N = 1524 | Salmeterol 50 N = 1521 | FP 500 N = 1534 | salmeterol and fluticasone propionate 50/500 N = 1533 |
|--|-----------------------------|---------------------------------------|-----------------------------|--|
| All cause mortality at 3 years | | | | |
| Number of deaths (%) | 231 (15.2%) | 205 (13.5%) | 246 (16.0%) | 193 (12.6%) |
| Hazard Ratio vs Placebo (CIs) p value | N/A | 0.879 (0.73, 1.06) 0.180 | 1.060 (0.89, 1.27) 0.525 | 0.825 (0.68, 1.00) 0.052 ¹ |
| Hazard Ratio salmeterol and fluticasone propionate 50/500 vs components (CIs) p value | N/A | 0.932 (0.77, 1.13) 0.481 | 0.774 (0.64, 0.93) 0.007 | N/A |

¹ Non-significant P value after adjustment for 2 interim analyses on the primary efficacy comparison from a log-rank analysis stratified by smoking status

There was a trend towards improved survival in subjects treated with salmeterol and fluticasone propionate compared with placebo over 3 years however this did not achieve the statistical significance level $p \leq 0.05$.

The percentage of patients who died within 3 years due to COPD-related causes was 6.0% for placebo, 6.1% for salmeterol, 6.9% for FP and 4.7% for salmeterol and fluticasone propionate.

The mean number of moderate to severe exacerbations per year was significantly reduced with salmeterol and fluticasone propionate as compared with treatment with salmeterol, FP and placebo (mean rate in the salmeterol and fluticasone propionate group 0.85 compared with 0.97 in the salmeterol group, 0.93 in the FP group and 1.13 in the placebo). This translates to a reduction in the rate of moderate to severe exacerbations of 25% (95% CI: 19% to 31%; $p < 0.001$) compared with placebo, 12% compared with salmeterol (95% CI: 5% to 19%, $p = 0.002$) and 9% compared with FP (95% CI: 1% to 16%, $p = 0.024$). Salmeterol and FP significantly reduced exacerbation rates compared with placebo by 15% (95% CI: 7% to 22%; $p < 0.001$) and 18% (95% CI: 11% to 24%; $p < 0.001$) respectively.

Health Related Quality of Life, as measured by the St George's Respiratory Questionnaire (SGRQ) was improved by all active treatments in comparison with placebo. The average improvement over three years for salmeterol and fluticasone propionate compared with placebo was -3.1 units (95% CI: -4.1 to -2.1; $p < 0.001$), compared with salmeterol was -2.2 units ($p < 0.001$) and compared with FP was -1.2 units ($p = 0.017$). A 4-unit decrease is considered clinically relevant.

The estimated 3-year probability of having pneumonia reported as an adverse event was 12.3% for placebo, 13.3% for salmeterol, 18.3% for FP and 19.6% for salmeterol and fluticasone propionate (Hazard ratio for salmeterol and fluticasone propionate vs placebo: 1.64, 95% CI: 1.33 to 2.01, $p < 0.001$). There was no increase in pneumonia-related deaths; deaths while on treatment that were adjudicated as primarily due to pneumonia were 7 for placebo, 9 for salmeterol, 13 for FP and 8 for salmeterol and fluticasone propionate. There was no significant difference in probability of bone fracture (5.1% placebo, 5.1% salmeterol, 5.4% FP and 6.3% salmeterol and fluticasone propionate; Hazard ratio for salmeterol and fluticasone propionate vs placebo: 1.22, 95% CI: 0.87 to 1.72, $p = 0.248$).

Placebo-controlled clinical trials, over 6 and 12 months, have shown that regular use of salmeterol and fluticasone propionate 50/500 micrograms improves lung function and reduces breathlessness and the use of relief medication.

Studies SCO40043 and SCO100250 were randomised, double blind, parallel group, replicate studies comparing the effect of salmeterol and fluticasone propionate 50/250 micrograms bd (a dose not licensed for COPD treatment in the European Union) with salmeterol 50 micrograms bd on the annual rate of

moderate/severe exacerbations in subjects with COPD with FEV₁ less than 50% predicted and a history of exacerbations. Moderate/ severe exacerbations were defined as worsening symptoms that required treatment with oral corticosteroids and/or antibiotics or in-patient hospitalisation.

The trials had a 4 week run-in period during which all subjects received open-label salmeterol/ FP 50/250 to standardize COPD pharmacotherapy and stabilise disease prior to randomisation to blinded study medication for 52 weeks. Subjects were randomised 1:1 to salmeterol/ FP 50/250 (total ITT n=776) or salmeterol (total ITT n=778). Prior to run-in, subjects discontinued use of previous COPD medications except short-acting bronchodilators. The use of concurrent inhaled long-acting bronchodilators (β_2 agonist and anticholinergic), ipratropium/salbutamol combination products, oral β_2 agonists, and theophylline preparations were not allowed during the treatment period. Oral corticosteroids and antibiotics were allowed for the acute treatment of COPD exacerbations with specific guidelines for use. Subjects used salbutamol on an as-needed basis throughout the studies. The results of both studies showed that treatment with salmeterol and fluticasone propionate 50/250 resulted in a significantly lower annual rate of moderate/severe COPD exacerbations compared with salmeterol (SCO40043: 1.06 and 1.53 per subject per year, respectively, rate ratio of 0.70, 95% CI: 0.58 to 0.83, p<0.001; SCO100250: 1.10 and 1.59 per subject per year, respectively, rate ratio of 0.70, 95% CI: 0.58 to 0.83, p<0.001). Findings for the secondary efficacy measures (time to first moderate/severe exacerbation, the annual rate of exacerbations requiring oral corticosteroids, and pre-dose morning (AM) FEV₁) significantly favoured salmeterol and fluticasone propionate 50/250 micrograms bd over salmeterol. Adverse event profiles were similar with the exception of a higher incidence of pneumonias and known local side effects (candidiasis and dysphonia) in the salmeterol and fluticasone propionate 50/250 micrograms bd group compared with salmeterol. Pneumonia-related events were reported for 55 (7%) subjects in salmeterol and fluticasone propionate 50/250 micrograms bd group and 25 (3%) in the salmeterol group. The increased incidence of reported pneumonia with salmeterol and fluticasone propionate 50/250 micrograms bd appears to be of similar magnitude to the incidence reported following treatment with salmeterol and fluticasone propionate 50/500 micrograms bd in TORCH.

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 (0.638-1.662) ^a | | 1.285 (0.726-2.272) ^b | |
| Death | 0 | 0 | 0 | 0 |
| Asthma-related hospitalisation | 34 | 33 | 27 | 21 |
| Endotracheal intubation | 0 | 2 | 0 | 0 |

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

^b 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 | FP Alone | Salmeterol-FP | FP Alone |
| | | | | |

| | | | | |
|--|-------------------------|-------------|-------------------------|-------------|
| | (n = 5,834) | (n = 5,845) | (n = 3,107) | (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.

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

For pharmacokinetic purposes 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 or COPD 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

In a population pharmacokinetic analysis utilising data from 9 controlled clinical trials with different devices (Diskus metered dose inhaler) that included 350 patients with asthma aged 4 to 77 years higher fluticasone propionate systemic exposure following treatment with Salmeterol and fluticasone propionate Diskus 50/100 compared to fluticasone propionate Diskus 100 were seen.

Geometric Mean Ratio [90% CI] for the Salmeterol/fluticasone propionate vs. fluticasone propionate Diskus Comparison in Adolescent/Adult Populations

| Treatment (test vs. ref) | Population | AUC | C_{max} |
|--|--------------------------|--------------------|------------------------|
| Salmeterol/fluticasone propionate Diskus 50/100 fluticasone propionate Diskus 100 | Adolescent/Adult (≥12yr) | 1.52 [1.08 – 2.13] | 1.52 [1.08 – 2.16] |

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 embryofetal 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.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Lactose monohydrate (which contains milk proteins).

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

2 years

6.4 Special precautions for storage

Store below 30°C, in the original package in order to protect from moisture.

6.5 Nature and contents of container

Blisters made from polyamide (OPA)/Aluminium/polyvinyl chloride (PVC)/Aluminium/polyethylene terephthalate (PET)/paper contained in a molded plastic inhaler equipped with a mouthpiece and dose counter. The inhaler is packed in a cardboard box.
One inhaler contains 60 inhalations.

The plastic devices are available in cardboard containers, which hold 1 x 60 dose, 2 x 60 dose, 3x 60 dose, 10 x 60 dose Stalpex

Not all pack sizes may be marketed.

6.6 Special precautions for disposal and other handling

The Stalpex inhaler releases a powder which is inhaled into the lungs. A dose indicator on the device indicates the number of doses left. For detailed instructions for use see the Patient Information Leaflet.

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

7 MARKETING AUTHORISATION HOLDER

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