

## **SUMMARY OF PRODUCT CHARACTERISTICS**

### **1 NAME OF THE MEDICINAL PRODUCT**

Solifenacin succinate 5 mg film coated tablets

### **2 QUALITATIVE AND QUANTITATIVE COMPOSITION**

Each tablet contains 5 mg solifenacin succinate, corresponding to 3.8 mg solifenacin.

Excipients with known effect: Each tablet contains lactose monohydrate 149.05 mg.

For the full list of excipients, see section 6.1.

### **3 PHARMACEUTICAL FORM**

Film-coated tablet.

A white to yellowish lenticular film-coated tablet with a diameter of 8.0 - 8.2 mm.

### **4 CLINICAL PARTICULARS**

#### **4.1 Therapeutic indications**

Symptomatic treatment of urge incontinence and/or increased urinary frequency and urgency as may occur in patients with overactive bladder syndrome.

#### **4.2 Posology and method of administration**

Posology

Adults, including the elderly

The recommended dose is 5 mg solifenacin succinate once daily. If needed, the dose may be increased to 10 mg solifenacin succinate once daily.

Paediatric population

The safety and efficacy of solifenacin in children have not yet been established. Therefore, solifenacin should not be used in children.

#### Patients with renal impairment

No dose adjustment is necessary for patients with mild to moderate renal impairment (creatinine clearance > 30 ml/min). Patients with severe renal impairment (creatinine clearance ≤ 30 ml/min) should be treated with caution and receive no more than 5 mg once daily (see section 5.2).

#### Patients with hepatic impairment

No dose adjustment is necessary for patients with mild hepatic impairment. Patients with moderate hepatic impairment (Child-Pugh score of 7 to 9) should be treated with caution and receive no more than 5 mg once daily (see section 5.2).

#### Potent inhibitors of cytochrome P450 3A4

The maximum dose of solifenacin succinate should be limited to 5 mg when treated simultaneously with ketoconazole or therapeutic doses of other potent CYP3A4 inhibitors e.g. ritonavir, nelfinavir, itraconazole (see section 4.5).

#### Method of administration

Solifenacin should be taken orally and should be swallowed whole with liquids. It can be taken with or without food.

### **4.3 Contraindications**

Solifenacin is contraindicated in patients

- hypersensitive to the active substance or to any of the excipients listed in section 6.1.
- with urinary retention, severe gastro-intestinal condition (including toxic megacolon), myasthenia gravis or narrow-angle glaucoma and in patients at risk for these conditions.
- undergoing haemodialysis (see section 5.2).
- with severe hepatic impairment (see section 5.2).
- with severe renal impairment or moderate hepatic impairment and who are on treatment with a potent CYP3A4 inhibitor, e.g. ketoconazole (see section 4.5).

### **4.4 Special warnings and precautions for use**

Other causes of frequent urination (heart failure or renal disease) should be assessed before treatment with Solifenacin. If urinary tract infection is present, an appropriate antibacterial therapy should be started.

Solifenacin should be used with caution in patients with

- clinically significant bladder outflow obstruction at risk of urinary retention.
- gastrointestinal obstructive disorders.
- risk of decreased gastrointestinal motility.
- severe renal impairment (creatinine clearance ≤ 30 ml/min; see sections 4.2 and 5.2) and doses should not exceed 5 mg for these patients.
- moderate hepatic impairment (Child-Pugh score of 7 to 9; see sections 4.2 and 5.2) and doses should not exceed 5 mg for these patients.

- concomitant use of a potent CYP3A4 inhibitor, e.g. ketoconazole (see sections 4.2 and 4.5).
- hiatus hernia/gastro-oesophageal reflux and/or who are concurrently taking medicinal products (such as bisphosphonates) that can cause or exacerbate oesophagitis.
- autonomic neuropathy.

QT prolongation and Torsade de Pointes have been observed in patients with risk factors, such as pre-existing long QT syndrome and hypokalaemia.

Safety and efficacy have not yet been established in patients with a neurogenic cause for detrusor overactivity.

Angio-edema with airway obstruction has been reported in some patients on solifenacin succinate. If angio-edema occurs, solifenacin succinate should be discontinued and appropriate therapy and/or measures should be taken.

Anaphylactic reaction has been reported in some patients treated with solifenacin succinate. In patients who develop anaphylactic reactions, solifenacin succinate should be discontinued and appropriate therapy and/or measures should be taken.

The maximum effect of Solifenacin can be determined after 4 weeks at the earliest.

The product contains lactose monohydrate. Patients with rare hereditary problems of galactose intolerance, total lactase deficiency or glucose-galactose malabsorption should not take this medicine.

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

### Pharmacological interactions

Concomitant medication with other medicinal products with anticholinergic properties may result in more pronounced therapeutic effects and undesirable effects. An interval of approximately one week should be allowed after stopping treatment with Solifenacin before commencing other anticholinergic therapy. The therapeutic effect of solifenacin may be reduced by concomitant administration of cholinergic receptor agonists.

Solifenacin can reduce the effect of medicinal products that stimulate the motility of the gastro-intestinal tract, such as metoclopramide and cisapride.

### Pharmacokinetic interactions

*In vitro* studies have demonstrated that at therapeutic concentrations, solifenacin does not inhibit CYP1A1/2, 2C9, 2C19, 2D6, or 3A4 derived from human liver microsomes. Therefore, solifenacin is unlikely to alter the clearance of drugs metabolised by these CYP enzymes.

### Effect of other medicinal products on the pharmacokinetics of solifenacin

Solifenacin is metabolised by CYP3A4. Simultaneous administration of ketoconazole (200 mg/day), a potent CYP3A4 inhibitor, resulted in a 2-fold increase of the AUC of solifenacin, while ketoconazole at a dose of 400 mg/day resulted in a 3-fold increase of the AUC of solifenacin. Therefore, the maximum dose of Solifenacin

should be restricted to 5 mg when used simultaneously with ketoconazole or therapeutic doses of other potent CYP3A4 inhibitors (e.g. ritonavir, nelfinavir, itraconazole) (see section 4.2). Simultaneous treatment of solifenacin and a potent CYP3A4 inhibitor is contra-indicated in patients with severe renal impairment or moderate hepatic impairment.

The effects of enzyme induction on the pharmacokinetics of solifenacin and its metabolites have not been studied as well as the effect of higher affinity CYP3A4 substrates on solifenacin exposure. Since solifenacin is metabolised by CYP3A4, pharmacokinetic interactions are possible with other CYP3A4 substrates with higher affinity (e.g. verapamil, diltiazem) and CYP3A4 inducers (e.g. rifampicin, phenytoin, carbamazepine).

#### Effect of solifenacin on the pharmacokinetics of other medicinal products

##### *Oral contraceptives*

Intake of solifenacin showed no pharmacokinetic interaction of solifenacin on combined oral contraceptives (ethinylestradiol/levonorgestrel).

##### *Warfarin*

Intake of solifenacin did not alter the pharmacokinetics of *R*-warfarin or *S*-warfarin or their effect on prothrombin time.

##### *Digoxin*

Intake of solifenacin showed no effect on the pharmacokinetics of digoxin.

## **4.6 Fertility, pregnancy and lactation**

### Pregnancy

No clinical data are available from women who became pregnant while taking solifenacin. Animal studies do not indicate direct harmful effects on fertility, embryonal/foetal development or parturition (see section 5.3). The potential risk for humans is unknown. Caution should be exercised when prescribing to pregnant women.

### Breast-feeding

No data on the excretion of solifenacin in human milk are available. In mice, solifenacin and/or its metabolites was excreted in milk, and caused a dose dependent failure to thrive in neonatal mice (see section 5.3). The use of Solifenacin should therefore be avoided during breast-feeding.

### Fertility

No fertility data are available.

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

Since solifenacin, like other anticholinergics may cause blurred vision, and, uncommonly, somnolence and fatigue (see section 4.8), the ability to drive and use machines may be negatively affected.

#### 4.8 Undesirable effects

##### Summary of the safety profile

Due to its pharmacological effect, solifenacin may cause anticholinergic undesirable effects of (in general) mild or moderate severity. The frequency of anticholinergic undesirable effects is dose related.

The most commonly reported adverse reaction with solifenacin was dry mouth. It occurred in 11% of patients treated with 5 mg once daily, in 22% of patients treated with 10 mg once daily and in 4% of placebo-treated patients. The severity of dry mouth was generally mild and did only occasionally lead to discontinuation of treatment. In general, medicinal product compliance was very high (approximately 99%) and approximately 90% of the patients treated with solifenacin completed the full study period of 12 weeks treatment.

##### Tabulated list of adverse reactions

The following table summarises adverse drug reactions of solifenacin divided into groups according to MedDRA terminology together with their frequency: 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  $< 1/1,000$ ); very rare ( $< 1/10,000$ ), not known (cannot be estimated from the available data).

| MedDRA system organ class  | Frequency | Undesirable effect                    |
|--|-----------|---------------------------------------|
| Infections and infestations  | Uncommon  | Urinary tract infection<br>Cystitis   |
| <ul style="list-style-type: none"><li>Immune system disorders</li></ul>            | Not known | Anaphylactic reaction*                |
| <ul style="list-style-type: none"><li>Metabolism and nutrition disorders</li></ul> | Not known | Decreased appetite*<br>Hyperkalaemia* |
| <ul style="list-style-type: none"><li>Psychiatric disorders</li></ul>              | Very rare | Hallucinations*<br>Confusional state* |
|  | Not known | Delirium*                             |
| <ul style="list-style-type: none"><li>Nervous system disorders</li></ul>           | Uncommon  | Somnolence<br>Dysgeusia               |
|  | Rare      | Dizziness*<br>Headache*               |
| <ul style="list-style-type: none"><li>Eye disorders</li></ul>                      | Common    | Blurred vision                        |
|  | Uncommon  | Dry eyes                              |

|   |             |   |
|---|-------------|---|
|   | Not known   | Glaucoma*   |
| • Cardiac disorders                               | Not known   | Torsade de Pointes*<br>Electrocardiogram QT prolonged*<br>Atrial fibrillation*<br>Palpitations*<br>Tachycardia* |
| • Respiratory, thoracic and mediastinal disorders | Uncommon    | Nasal dryness   |
|   | Not known   | Dysphonia*  |
| • Gastrointestinal disorders                      | Very common | Dry mouth   |
|   | Common      | Constipation<br>Nausea<br>Dyspepsia<br>Abdominal pain   |
|   | Uncommon    | Gastro-oesophageal reflux diseases<br>Dry throat  |
|   | Rare        | Colonic obstruction<br>Faecal impaction<br>Vomiting*  |
|   | Not known   | Ileus*<br>Abdominal discomfort*   |
| • Hepatobiliary disorders                         | Not known   | Liver disorder*<br>Liver function test abnormal*  |
| • Skin and subcutaneous tissue disorders          | Uncommon    | Dry skin  |
|   | Rare        | Pruritus*<br>Rash*  |
|   | Very rare   | Erythema multiforme*<br>Urticaria*<br>Angio-edema*  |
|   | Not known   | Exfoliative dermatitis*   |
| • Musculoskeletal and connective tissue disorders | Not known   | Muscular weakness*  |
| • Renal and urinary disorders                     | Uncommon    | Difficulty in micturition   |
|   | Rare        | Urinary retention   |

|  |           |                              |
|--|-----------|------------------------------|
|  | Not known | Renal impairment*            |
| <ul style="list-style-type: none"> <li>General disorders and administration site conditions</li> </ul> | Uncommon  | Fatigue<br>Peripheral oedema |

\* Observed post-marketing.

#### 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 at: [www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard) or search for MHRA Yellow Card in the Google Play or Apple App Store.

## 4.9 Overdose

### Symptoms

Overdosage with solifenacin succinate can potentially result in severe anticholinergic effects. The highest dose of solifenacin succinate accidentally given to a single patient was 280 mg in a 5 hour period, resulting in mental status changes not requiring hospitalization.

### Treatment

In the event of overdose with solifenacin succinate, the patient should be treated with activated charcoal. Gastric lavage is useful if performed within 1 hour, but vomiting should not be induced.

As for other anticholinergics, symptoms can be treated as follows:

- Severe central anticholinergic effects such as hallucinations or pronounced excitation: treat with physostigmine or carbachol.
- Convulsions or pronounced excitation: treat with benzodiazepines.
- Respiratory insufficiency: treat with artificial respiration.
- Tachycardia: treat with beta-blockers.
- Urinary retention: treat with catheterisation.
- Mydriasis: treat with pilocarpine eye drops and/or place patient in dark room.

As with other antimuscarinics, in case of overdosing, specific attention should be paid to patients with known risk for QT prolongation (i.e. hypokalaemia, bradycardia and concurrent administration of medicinal products known to prolong QT interval) and relevant pre-existing cardiac diseases (i.e. myocardial ischaemia, arrhythmia, congestive heart failure).

## 5 PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Urologicals, drugs for urinary frequency and incontinence;

ATC code: G04BD08.

#### Mechanism of action

Solifenacin is a competitive, specific cholinergic-receptor antagonist.

The urinary bladder is innervated by parasympathetic cholinergic nerves. Acetylcholine contracts the detrusor smooth muscle through muscarinic receptors of which the M<sub>3</sub> subtype is predominantly involved. *In vitro* and *in vivo* pharmacological studies indicate that solifenacin is a competitive inhibitor of the muscarinic M<sub>3</sub> subtype receptor. In addition, solifenacin showed to be a specific antagonist for muscarinic receptors by displaying low or no affinity for various other receptors and ion channels tested.

#### Pharmacodynamic effects

Treatment with solifenacin in doses of 5 mg and 10 mg daily was studied in several double-blind, randomised, controlled clinical trials in men and women with overactive bladder.

As shown in the table below, both the 5 mg and 10 mg doses of solifenacin produced statistically significant improvements in the primary and secondary endpoints compared with placebo. Efficacy was observed within one week of starting treatment and stabilised over a period of 12 weeks. A long-term open-label study demonstrated that efficacy was maintained for at least 12 months. After 12 weeks of treatment, approximately 50% of patients suffering from incontinence before treatment were free of incontinence episodes, and in addition 35% of patients achieved a micturition frequency of less than 8 micturitions per day. Treatment of the symptoms of overactive bladder also results in a benefit on a number of Quality of Life measures, such as general health perception, incontinence impact, role limitations, physical limitations, social limitations, emotions, symptom severity, severity measures and sleep/energy.

Results (pooled data) of four controlled Phase 3 studies with a treatment duration of 12 weeks

|                                   | Placebo      | Solifenacin<br>5 mg o.d. | Solifenacin<br>10 mg o.d. | Tolterodine<br>2 mg b.i.d. |
|-----------------------------------|--------------|--------------------------|---------------------------|----------------------------|
| <b>No. of micturitions / 24 h</b> |              |                          |                           |                            |
| Mean baseline                     | 11.9         | 12.1                     | 11.9                      | 12.1                       |
| Mean reduction<br>from baseline   | 1.4<br>(12%) | 2.3<br>(19%)             | 2.7<br>(23%)              | 1.9<br>(16%)               |
| % change from                     |              |                          |                           |                            |

|  |        |         |         |         |
|--|--------|---------|---------|---------|
| baseline                                   | 1138   | 552     | 1158    | 250     |
| n  |        | < 0.001 | < 0.001 | 0.004   |
| p-value*                                   |        |         |         |         |
| <b>No. of urgency episodes / 24 h</b>      |        |         |         |         |
| Mean baseline                              | 6.3    | 5.9     | 6.2     | 5.4     |
| Mean reduction from baseline               | 2.0    | 2.9     | 3.4     | 2.1     |
|  | (32%)  | (49%)   | (55%)   | (39%)   |
| % change from baseline                     | 1124   | 548     | 1151    | 250     |
| n  |        | < 0.001 | < 0.001 | 0.031   |
| p-value*                                   |        |         |         |         |
| <b>No. of incontinence episodes / 24 h</b> |        |         |         |         |
| Mean baseline                              | 2.9    | 2.6     | 2.9     | 2.3     |
| Mean reduction from baseline               | 1.1    | 1.5     | 1.8     | 1.1     |
|  | (38%)  | (58%)   | (62%)   | (48%)   |
| % change from baseline                     | 781    | 314     | 778     | 157     |
| n  |        | < 0.001 | < 0.001 | 0.009   |
| p-value*                                   |        |         |         |         |
| <b>No. of nocturia episodes / 24 h</b>     |        |         |         |         |
| Mean baseline                              | 1.8    | 2.0     | 1.8     | 1.9     |
| Mean reduction from baseline               | 0.4    | 0.6     | 0.6     | 0.5     |
|  | (22%)  | (30%)   | (33%)   | (26%)   |
| % change from baseline                     | 1005   | 494     | 1035    | 232     |
| n  |        | 0.025   | < 0.001 | 0.199   |
| p-value*                                   |        |         |         |         |
| <b>Volume voided / micturition</b>         |        |         |         |         |
| Mean baseline                              | 166 ml | 146 ml  | 163 ml  | 147 ml  |
| Mean increase from baseline                | 9 ml   | 32 ml   | 43 ml   | 24 ml   |
|  | (5%)   | (21%)   | (26%)   | (16%)   |
| % change from baseline                     | 1135   | 552     | 1156    | 250     |
| n  |        | < 0.001 | < 0.001 | < 0.001 |
| p-value*                                   |        |         |         |         |

| <b>No. of pads / 24 h</b>    |              |              |              |              |
|------------------------------|--------------|--------------|--------------|--------------|
| Mean baseline                | 3.0          | 2.8          | 2.7          | 2.7          |
| Mean reduction from baseline | 0.8<br>(27%) | 1.3<br>(46%) | 1.3<br>(48%) | 1.0<br>(37%) |
| % change from baseline       | 238          | 236          | 242          | 250          |
| n                            |              | < 0.001      | < 0.001      | 0.010        |
| p-value*                     |              |              |              |              |

Note: In 4 of the pivotal studies, solifenacin 10 mg and placebo were used. In 2 out of the 4 studies also solifenacin 5 mg was used and one of the studies included tolterodine 2 mg b.i.d.

Not all parameters and treatment groups were evaluated in each individual study. Therefore, the numbers of patients listed may deviate per parameter and treatment group.

\* p-value for the pair-wise comparison to placebo.

## 5.2 Pharmacokinetic properties

### Absorption

After intake of solifenacin tablets, maximum solifenacin plasma concentrations ( $C_{max}$ ) are reached after 3 to 8 hours. The  $t_{max}$  is independent of the dose. The  $C_{max}$  and area under the curve (AUC) increase in proportion to the dose between 5 to 40 mg. Absolute bioavailability is approximately 90%. Food intake does not affect the  $C_{max}$  and AUC of solifenacin.

### Distribution

The apparent volume of distribution of solifenacin following intravenous administration is about 600 l. Solifenacin is to a great extent (approximately 98%) bound to plasma proteins, primarily  $\alpha_1$ -acid glycoprotein.

### Biotransformation

Solifenacin is extensively metabolised by the liver, primarily by cytochrome P450 3A4 (CYP3A4). However, alternative metabolic pathways exist, that can contribute to the metabolism of solifenacin. The systemic clearance of solifenacin is about 9.5 l/h and the terminal half-life of solifenacin is 45 – 68 hours. After oral dosing, one pharmacologically active (4*R*-hydroxy solifenacin) and three inactive metabolites (N-glucuronide, N-oxide and 4*R*-hydroxy-N-oxide of solifenacin) have been identified in plasma in addition to solifenacin.

### Elimination

After a single administration of 10 mg [<sup>14</sup>C-labelled]-solifenacin, about 70% of the radioactivity was detected in urine and 23% in faeces over 26 days. In urine, approximately 11% of the radioactivity is recovered as unchanged active substance; about 18% as the N-oxide metabolite, 9% as the 4*R*-hydroxy-N-oxide metabolite and 8% as the 4*R*-hydroxy metabolite (active metabolite).

#### Linearity/non-linearity

Pharmacokinetics are linear in the therapeutic dose range.

#### Special populations

##### *Elderly*

No dosage adjustment based on patient age is required. Studies in elderly have shown that the exposure to solifenacin, expressed as the AUC, after administration of solifenacin succinate (5 mg and 10 mg once daily) was similar in healthy elderly subjects (aged 65 – 80 years) and healthy young subjects (aged less than 55 years). The mean rate of absorption expressed as  $t_{max}$  was slightly slower in the elderly and the terminal half-life was approximately 20% longer in elderly subjects. These modest differences were considered not clinically significant.

The pharmacokinetics of solifenacin have not been established in children and adolescents.

##### *Gender*

The pharmacokinetics of solifenacin are not influenced by gender.

##### *Race*

The pharmacokinetics of solifenacin are not influenced by race.

##### *Renal impairment*

The AUC and  $C_{max}$  of solifenacin in mild and moderate renally impaired patients, was not significantly different from that found in healthy volunteers. In patients with severe renal impairment (creatinine clearance  $\leq$  30 ml/min), exposure to solifenacin was significantly greater than in the controls, with increases in  $C_{max}$  of about 30%, AUC of more than 100% and  $t_{1/2}$  of more than 60%. A statistically significant relationship was observed between creatinine clearance and solifenacin clearance.

Pharmacokinetics in patients undergoing haemodialysis have not been studied.

##### *Hepatic impairment*

In patients with moderate hepatic impairment (Child-Pugh score of 7 to 9) the  $C_{max}$  is not affected, AUC increased by 60% and  $t_{1/2}$  doubled. Pharmacokinetics of solifenacin in patients with severe hepatic impairment have not been studied.

### **5.3 Preclinical safety data**

Preclinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, fertility, embryofetal development, genotoxicity, and carcinogenic potential. In the pre- and postnatal development study in mice, solifenacin treatment of the mother during lactation caused dose-dependent lower postpartum survival rate, decreased pup weight and slower physical development at clinically relevant levels. Dose related increased mortality without preceding clinical signs occurred in juvenile mice treated from day 10 or 21 after birth with doses that achieved a pharmacological effect and both groups had higher mortality compared to adult mice. In juvenile mice treated from postnatal day 10, plasma exposure was higher than in adult mice; from postnatal day 21 onwards, the systemic exposure was comparable to adult mice. The clinical implications of the increased mortality in juvenile mice are not known.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

#### Core tablet

Maize starch pregelatinized

Lactose monohydrate

Cellulose, microcrystalline

Hypromellose

Magnesium stearate

#### Film coating

Macrogol 6000

Talc

Hypromellose

Titanium dioxide (E171)

Iron oxide yellow (E172)

### **6.2 Incompatibilities**

Not applicable.

### **6.3 Shelf life**

2 years.

**6.4 Special precautions for storage**

This medicinal product does not require any special temperature storage conditions.  
Store in the original package in order to protect from light.

**6.5 Nature and contents of container**

OPA/Al/PVC/Al blisters.

Pack sizes: 10, 30, 50, 90, 100 film-coated tablets.

Not all pack sizes may be marketed.

**6.6 Special precautions for disposal**

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

**7 MARKETING AUTHORISATION HOLDER**

Zentiva Pharma UK Limited  
12 New Fetter Lane  
London  
EC4A 1JP  
United Kingdom

**8 MARKETING AUTHORISATION NUMBER(S)**

PL 17780/0816

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

24/08/2018

**10 DATE OF REVISION OF THE TEXT**

20/03/2020