

# Summary of Product Characteristics

## 1 NAME OF THE MEDICINAL PRODUCT

Reactine 1mg/ml Oral Solution

## 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

One ml of solution contains 1mg of cetirizine dihydrochloride.

Excipients:

- one ml of solution contains 450 mg sorbitol (solution at 70%, non crystallizing)
- one ml of solution contains 1.35 mg methylparahydroxybenzoate
- one ml of solution contains 0.15 mg propylparahydroxybenzoate

For a full list of excipients, see section 6.1

## 3 PHARMACEUTICAL FORM

Oral solution.

Clear and colourless liquid.

## 4 CLINICAL PARTICULARS

### 4.1 Therapeutic Indications

In adults and children 2 year and above:

- Cetirizine is indicated for the relief of nasal and ocular symptoms of seasonal and perennial allergic rhinitis.
- Cetirizine is indicated for the relief of symptoms of chronic idiopathic urticaria.

### 4.2 Posology and method of administration

Children aged from 2 to 6 years: 2.5 mg twice daily (2.5 ml oral solution twice daily (a half spoon twice daily)).

Children aged from 6 to 12 years: 5 mg twice daily (5 ml oral solution bid (a full spoon twice daily)).

Adults and adolescents over 12 years of age: 10 mg once daily (10 ml oral solution (2 full spoons)).

The solution can be swallowed as such.

Elderly subjects: data do not suggest that the dose needs to be reduced in elderly subjects provided that the renal function is normal.

For patients who experience mild side effects the dosage should be halved and taken twice daily.

Patients with moderate to severe renal impairment: there are no data to document the efficacy/safety ratio in patients with renal impairment. Since cetirizine is mainly excreted via renal route (see section 5.2), in case no alternative treatment can be used, the dosing intervals must be individualised according to renal function. Refer to the following table and adjust the dose as indicated. To use this dosing table, an estimate of the patient's creatinine clearance (CLcr) in ml/min is needed.

The CL<sub>Cr</sub> (ml/min) may be estimated from serum creatinine (mg/dl) determination using the following formula:

$$\text{CL}_{\text{Cr}} = \frac{[140 - \text{age (years)}] \times \text{weight (kg)}}{72 \times \text{serum creatinine (mg/dl)}} \quad (\times 0.85 \text{ for women})$$

Dosing adjustments for adult patients with impaired renal function

Group	Creatinine clearance (ml/min)	Dosage and frequency
Normal	≥80	10 mg once daily
Mild	50 – 79	10 mg once daily
Moderate	30 – 49	5 mg once daily
Severe	< 30	5 mg once every 2 days
End-stage renal disease - Patients undergoing dialysis	< 10	Contra-indicated

In pediatric patients suffering from renal impairment, the dose will have to be adjusted on an individual basis taking into account the renal clearance of the patient, his age and his body weight.

Patients with hepatic impairment: no dose adjustment is needed in patients with solely hepatic impairment.

Patients with hepatic impairment and renal impairment: dose adjustment is recommended (see Patients with moderate to severe renal impairment above).

### 4.3 Contraindications

Hypersensitivity to the active substance, to any of the excipients, to hydroxyzine or to any piperazine derivatives.

Patients with severe renal impairment at less than 10 ml/min creatinine clearance.

Patients with rare hereditary problems of fructose intolerance should not take cetirizine 1 mg/ml oral solution.

### 4.4 Special warnings and precautions for use

At therapeutic doses, no clinically significant interactions have been demonstrated with alcohol (for a blood alcohol level of 0.5 g/L). Nevertheless, precaution is recommended if alcohol is taken concomitantly.

Caution in epileptic patients and patients at risk of convulsions is recommended.

The use of the product is not recommended in children aged less than 2 years.

Methyl parahydroxybenzoate and propyl parahydroxybenzoate may cause allergic reactions (possibly delayed).

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

Due to the pharmacokinetic, pharmacodynamic and tolerance profile of cetirizine, no interactions are expected with this antihistamine. Actually, neither pharmacodynamic nor significant pharmacokinetic interaction was reported in drug-drug interactions studies performed, notably with pseudoephedrine or theophylline (400 mg/day).

The extent of absorption of cetirizine is not reduced with food, although the rate of absorption is decreased.

### 4.6 Fertility, pregnancy and lactation

For cetirizine very rare clinical data on exposed pregnancies are available. Animal studies do not indicate direct or indirect harmful effects with respect to pregnancy, embryonal/fetal development, parturition or postnatal development.

Caution should be exercised when prescribing to pregnant or breast feeding women because cetirizine passes into breast milk.

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

Objective measurements of driving ability, sleep latency and assembly line performance have not demonstrated any clinically relevant effects at the recommended dose of 10 mg.

Patients intending to drive, engaging in potentially hazardous activities or operating machinery should not exceed the recommended dose and should take their response to the medicinal product into account. In these sensitive patients, concurrent use with alcohol or other CNS depressants may cause additional reductions in alertness and impairment of performance.

#### 4.8 Undesirable effects

Clinical studies have shown that cetirizine at the recommended dosage has minor undesirable effects on the CNS, including somnolence, fatigue, dizziness and headache. In some cases, paradoxical CNS stimulation has been reported.

Although cetirizine is a selective antagonist of peripheral H<sub>1</sub>-receptors and is relatively free of anticholinergic activity, isolated cases of micturition difficulty, eye accommodation disorders and dry mouth have been reported.

Instances of abnormal hepatic function with elevated hepatic enzymes accompanied by elevated bilirubin have been reported. Mostly this resolves upon discontinuation of the treatment with cetirizine dihydrochloride.

#### Clinical trials

Double blind controlled clinical or pharmacoclinical trials comparing cetirizine to placebo or other antihistamines at the recommended dosage (10 mg daily for cetirizine), of which quantified safety data are available, included more than 3200 subjects exposed to cetirizine.

From this pooling, the following adverse events were reported for cetirizine 10 mg in the placebo-controlled trials at rates of 1.0 % or greater:

<b>Adverse event (WHO-ART)</b>	<b>Cetirizine 10 mg (n= 3260)</b>	<b>Placebo (n = 3061)</b>
Body as a whole – general disorders Fatigue	1.63 %	0.95 %
Central and peripheral nervous system disorders Dizziness Headache	1.10 % 7.42 %	0.98 % 8.07 %
Gastro-intestinal system disorders Abdominal pain Dry mouth Nausea	0.98 % 2.09 % 1.07 %	1.08 % 0.82 % 1.14 %
Psychiatric disorders Somnolence	9.63 %	5.00 %
Respiratory system disorders Pharyngitis	1.29 %	1.34 %

Although statistically more common than under placebo, somnolence was mild to moderate in the majority of cases. Objective tests as demonstrated by other studies have demonstrated that usual daily activities are unaffected at the recommended daily dose in healthy young volunteers.

Adverse drug reactions at rates of 1 % or greater in children aged from 6 months to 12 years, included in placebo-controlled clinical or pharmacoclinical trials are:

<b>Adverse drug reactions (WHO-ART)</b>	<b>Cetirizine (n=1656)</b>	<b>Placebo (n =1294)</b>
Gastro-intestinal system disorders Diarrhoea	1.0 %	0.6 %
Psychiatric disorders Somnolence	1.8 %	1.4 %
Respiratory system disorders Rhinitis	1.4 %	1.1 %
Body as a whole – general disorders Fatigue	1.0 %	0.3 %

#### Post-marketing experience

In addition to the adverse effects reported during clinical studies and listed above, isolated cases of the following adverse drug reactions have been reported in post-marketing experience. For these less frequently reported undesirable effects, the estimated frequencies (uncommon:  $\geq 1/1,000$  to  $< 1/100$ , rare:  $\geq 1/10,000$  to  $< 1/1,000$ , very rare:  $< 1/10,000$ ) are made based on post-marketing experience.

#### *Blood and lymphatic disorders:*

Very rare: thrombocytopenia

#### *Immune system disorders:*

Rare: hypersensitivity

Very rare: anaphylactic shock

#### *Psychiatric disorders:*

Uncommon: agitation

Rare: aggression, confusion, depression, hallucination, insomnia

Very rare: tic

#### *Nervous system disorders:*

Uncommon: paraesthesia

Rare: convulsions, movements disorders

Very rare: dysgeusia, syncope, tremor, dystonia, dyskinesia

#### *Eye disorders:*

Very rare: accommodation disorder, blurred vision, oculogyration

#### *Cardiac disorders:*

Rare: tachycardia

#### *Gastro-intestinal disorders:*

Uncommon: diarrhoea

#### *Hepatobiliary disorders:*

Rare: hepatic function abnormal (increased transaminases, alkaline phosphatase,  $\gamma$ -GT and bilirubin)

#### *Skin and subcutaneous tissue disorders:*

Uncommon: pruritus, rash

Rare: urticaria

Very rare: angioneurotic oedema, fixed drug eruption

*Renal and urinary disorders:*

Very rare: dysuria, enuresis

*General disorders and administration site conditions:*

Uncommon: asthenia, malaise

Rare: oedema

*Investigations:*

Rare: weight increased

**4.9 Overdose**Symptoms

Symptoms observed after an overdose of cetirizine are mainly associated with CNS effects or with effects that could suggest an anticholinergic effect.

Adverse events reported after an intake of at least 5 times the recommended daily dose are: confusion, diarrhoea, dizziness, fatigue, headache, malaise, mydriasis, pruritus, restlessness, sedation, somnolence, stupor, tachycardia, tremor, and urinary retention.

Management

There is no known specific antidote to cetirizine.

Should overdose occur, symptomatic or supportive treatment is recommended. Gastric lavage should be considered following ingestion of a short occurrence.

Cetirizine is not effectively removed by dialysis.

**5 PHARMACOLOGICAL PROPERTIES****5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Piperazine derivatives, ATC code: R06A E07

Cetirizine, a human metabolite of hydroxyzine, is a potent and selective antagonist of peripheral H<sub>1</sub>-receptors. *In vitro* receptor binding studies have shown no measurable affinity for other than H<sub>1</sub>-receptors.

In addition to its anti-H<sub>1</sub> effect, cetirizine was shown to display anti-allergic activities: at a dose of 10 mg once or twice daily, it inhibits the late phase recruitment of eosinophils, in the skin and conjunctiva of atopic subjects submitted to allergen challenge.

Studies in healthy volunteers show that cetirizine, at doses of 5 and 10 mg strongly inhibits the wheal and flare reactions induced by very high concentrations of histamine into the skin, but the correlation with efficacy is not established.

In a 35-day study in children aged 5 to 12, no tolerance to the antihistaminic effect (suppression of wheal and flare) of cetirizine was found. When a treatment with cetirizine is stopped after repeated administration, the skin recovers its normal reactivity to histamine within 3 days.

In a six-week, placebo-controlled study of 186 patients with allergic rhinitis and concomitant mild to moderate asthma, cetirizine 10 mg once daily improved rhinitis symptoms and did not alter pulmonary function. This study supports the safety of administering cetirizine to allergic patients with mild to moderate asthma.

In a placebo-controlled study, cetirizine given at the high daily dose of 60 mg for seven days did not cause statistically significant prolongation of QT interval.

At the recommended dosage, cetirizine has demonstrated that it improves the quality of life of patients with perennial and seasonal allergic rhinitis.

## 5.2 Pharmacokinetic properties

The steady - state peak plasma concentrations is approximately 300 ng/ml and is achieved within  $1.0 \pm 0.5$  h. No accumulation is observed for cetirizine following daily doses of 10 mg for 10 days. The distribution of pharmacokinetic parameters such as peak plasma concentration ( $C_{\max}$ ) and area under curve (AUC), is unimodal in human volunteers.

The extent of absorption of cetirizine is not reduced with food, although the rate of absorption is decreased. The extent of bioavailability is similar when cetirizine is given as solutions, capsules or tablets.

The apparent volume of distribution is 0.50 l/kg. Plasma protein binding of cetirizine is  $93 \pm 0.3$  %. Cetirizine does not modify the protein binding of warfarin.

Cetirizine does not undergo extensive first pass metabolism. About two third of the dose are excreted unchanged in urine. The terminal half-life is approximately 10 hours.

Cetirizine exhibits linear kinetics over the range of 5 to 60 mg.

### Special populations

*Elderly:* Following a single 10 mg oral dose, half-life increased by about 50 % and clearance decreased by 40 % in 16 elderly subjects compared to the normal subjects. The decrease in cetirizine clearance in these elderly volunteers appeared to be related to their decreased renal function.

*Children, infants and toddlers:* The half-life of cetirizine was about 6 hours in children of 6-12 years and 5 hours in children 2-6 years. In infants and toddlers aged 6 to 24 months, it is reduced to 3.1 hours

*Renally impaired patients:* The pharmacokinetics of the drug were similar in patients with mild impairment (creatinine clearance higher than 40 ml/min) and healthy volunteers. Patients with moderate renal impairment had a 3-fold increase in half-life and 70 % decrease in clearance compared to healthy volunteers.

Patients on hemodialysis (creatinine clearance less than 7 ml/min) given a single oral 10 mg dose of cetirizine had a 3-fold increase in half-life and a 70 % decrease in clearance compared to normal. Cetirizine was poorly cleared by haemodialysis. Dosing adjustment is necessary in patients with moderate or severe renal impairment (see section 4.2).

*Hepatically impaired patients:* Patients with chronic liver diseases (hepatocellular, cholestatic, and biliary cirrhosis) given 10 or 20 mg of cetirizine as a single dose had a 50 % increase in half-life along with a 40 % decrease in clearance compared to healthy subjects.

Dosing adjustment is only necessary in hepatically impaired patients if concomitant renal impairment is present.

## 5.3 Preclinical safety data

Non-clinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, genotoxicity, carcinogenic potential, toxicity to reproduction.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Sorbitol solution at 70% (non crystallizing) (E420)  
Glycerol (E422)  
Propylene glycol  
Sodium saccharinate  
Methylparahydroxybenzoate (E218)  
Propylparahydroxybenzoate (E216)  
Banana flavour 54.330/A (Firmenich)  
Sodium acetate  
Glacial acetic acid  
Purified Water

### **6.2 Incompatibilities**

Not applicable.

### **6.3 Shelf life**

3 years.

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

The medicinal product does not require any special storage conditions

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

Amber glass bottle (type III) of 75, 100 or 200 ml, closed with a white polypropylene child-resistant closure.  
Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal**

No special requirements.

## **7 MARKETING AUTHORISATION HOLDER**

McNeil Healthcare (Ireland) Limited.  
Airton Road  
Tallaght  
Dublin 24

## **8 MARKETING AUTHORISATION NUMBER**

PA 823/41/2

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

Date of first authorisation: 23<sup>rd</sup> June 2011

**10 DATE OF REVISION OF THE TEXT**