



## Clinical trial results:

### A Multicenter, Open-label, Single-dose Study to Evaluate Pharmacokinetics, Safety and Tolerability of Solifenacin Succinate Suspension in Pediatric Subjects from 5 to less than 18 years of age with Neurogenic Detrusor Overactivity (NDO)

#### Summary

EudraCT number	2011-000250-28
Trial protocol	BE GB DK
Global end of trial date	13 August 2012

#### Results information

Result version number	v1
This version publication date	22 February 2016
First version publication date	11 July 2015

#### Trial information

##### Trial identification

Sponsor protocol code	905-CL-079
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##### Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT01539707
WHO universal trial number (UTN)	-

Notes:

#### Sponsors

Sponsor organisation name	Astellas Pharma Europe B.V.
Sponsor organisation address	Sylviusweg 62, Leiden, Netherlands, 2333 BE
Public contact	Clinical Trial Disclosure, Astellas Pharma Global Development, Inc., Astellas.resultsdisclosure@astellas.com
Scientific contact	Clinical Trial Disclosure, Astellas Pharma Global Development, Inc., Astellas.resultsdisclosure@astellas.com

Notes:

#### Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	No
Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial?	No
Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial?	Yes

Notes:

## Results analysis stage

Analysis stage	Final
Date of interim/final analysis	13 August 2012
Is this the analysis of the primary completion data?	Yes
Primary completion date	13 August 2012
Global end of trial reached?	Yes
Global end of trial date	13 August 2012
Was the trial ended prematurely?	No

Notes:

## General information about the trial

Main objective of the trial:

To evaluate the pharmacokinetics (PK) of solifenacin succinate suspension after single-dose administration in children and adolescents with NDO.

Protection of trial subjects:

This clinical study was written, conducted and reported in accordance with the protocol, ICH GCP Guidelines, and applicable local regulations, including the European Directive 2001/20/EC, on the protection of human rights, and with the ethical principles that have their origin in the Declaration of Helsinki.

Astellas ensures that the use and disclosure of protected health information (PHI) obtained during a research study complies with the federal, national and/or regional legislation related to the privacy and protection of personal information.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	13 March 2012
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

## Population of trial subjects

### Subjects enrolled per country

Country: Number of subjects enrolled	Poland: 11
Country: Number of subjects enrolled	Denmark: 3
Country: Number of subjects enrolled	Belgium: 1
Worldwide total number of subjects	15
EEA total number of subjects	15

Notes:

### Subjects enrolled per age group

In utero	0
Preterm newborn - gestational age < 37 wk	0
Newborns (0-27 days)	0
Infants and toddlers (28 days-23 months)	0
Children (2-11 years)	7

Adolescents (12-17 years)	8
Adults (18-64 years)	0
From 65 to 84 years	0
85 years and over	0

## Subject disposition

### Recruitment

Recruitment details: -

### Pre-assignment

Screening details:

Children and adolescents with NDO (confirmed by urodynamics), who consented to enter this study and fulfilled all the eligibility criteria, were enrolled in this study.

### Period 1

Period 1 title	Overall study (overall period)
Is this the baseline period?	Yes
Allocation method	Not applicable
Blinding used	Not blinded

### Arms

Are arms mutually exclusive?	Yes
<b>Arm title</b>	AD-PED 5.0 mg

Arm description:

Male and female adolescents aged 12 to less than 18 years old who received pediatric equivalent dose (PED) of 5 mg of solifenacin succinate.

Arm type	Experimental
Investigational medicinal product name	Solifenacin succinate suspension
Investigational medicinal product code	YM905
Other name	
Pharmaceutical forms	Oral suspension
Routes of administration	Oral use

Dosage and administration details:

Adolescents were given a single dose of solifenacin succinate liquid suspension orally via syringe in the morning of day 1 followed by a glass of water. Doses were calculated per weight of the participant, targeting to have equivalent dose of 5 mg dose of solifenacin once daily in adults (referred to as PED of 5 mg).

<b>Arm title</b>	CH-PED 5.0 mg
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Arm description:

Male and female children aged 5 to less than 12 years old who received PED of 5 mg of solifenacin succinate.

Arm type	Experimental
Investigational medicinal product name	Solifenacin succinate suspension
Investigational medicinal product code	YM905
Other name	
Pharmaceutical forms	Oral suspension
Routes of administration	Oral use

Dosage and administration details:

Children were given a single dose of solifenacin succinate liquid suspension orally via syringe in the morning of day 1 followed by a glass of water. Doses were calculated per weight of the participant, targeting to have equivalent dose of 5 mg dose of solifenacin once daily in adults (referred to as PED of 5 mg).

<b>Number of subjects in period 1</b>	AD-PED 5.0 mg	CH-PED 5.0 mg
Started	8	7
Treated	7	7
Completed	7	7
Not completed	1	0
Consent withdrawn by subject	1	-

## Baseline characteristics

### Reporting groups

Reporting group title	AD-PED 5.0 mg
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Reporting group description:

Male and female adolescents aged 12 to less than 18 years old who received pediatric equivalent dose (PED) of 5 mg of solifenacin succinate.

Reporting group title	CH-PED 5.0 mg
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Reporting group description:

Male and female children aged 5 to less than 12 years old who received PED of 5 mg of solifenacin succinate.

Reporting group values	AD-PED 5.0 mg	CH-PED 5.0 mg	Total
Number of subjects	8	7	15
Age categorical			
Units: Subjects			
Children (2-11 years)	0	7	7
Adolescents (12-17 years)	8	0	8
Age continuous			
This baseline characteristic was based on the Safety Analysis Set (SAF), which consisted of all enrolled participants who received any dose of study drug. As a participant in the AD-PED 5.0 mg did not receive any study drug, his age was not included in this calculation.			
Units: years			
arithmetic mean	14.4	8.6	
standard deviation	± 2.07	± 1.72	-
Gender categorical			
Units: Subjects			
Female	4	3	7
Male	4	4	8

## End points

### End points reporting groups

Reporting group title	AD-PED 5.0 mg
Reporting group description: Male and female adolescents aged 12 to less than 18 years old who received pediatric equivalent dose (PED) of 5 mg of solifenacin succinate.	
Reporting group title	CH-PED 5.0 mg
Reporting group description: Male and female children aged 5 to less than 12 years old who received PED of 5 mg of solifenacin succinate.	

### Primary: Maximum concentration (C<sub>max</sub>)

End point title	Maximum concentration (C <sub>max</sub> ) <sup>[1]</sup>
End point description: The analysis population was the pharmacokinetic analysis set (PKAS), which consisted of all participants who received any dose of study drug and who had values of solifenacin concentration for a sufficient number of time points to reliably calculate at least 1 pharmacokinetic parameter. The number of samples as well sampling times depended on the age of the participant (aged 5-less than 9 years old: 4 samples; aged 9-less than 12 years old: 6 samples; aged 12-less than 18 years old: 7 samples).	
End point type	Primary
End point timeframe: Day 1 predose up to Day 7 postdose	

Notes:

[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: This study was written with no planned statistical analyses (statistical hypothesis testing) to be performed for any end points due to the simple design and purpose of the study.

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	7	7		
Units: ng/mL				
arithmetic mean (standard deviation)	21.906 (± 7.931)	17.666 (± 5.8884)		

### Statistical analyses

No statistical analyses for this end point

### Primary: Time to attain C<sub>max</sub> (t<sub>max</sub>)

End point title	Time to attain C <sub>max</sub> (t <sub>max</sub> ) <sup>[2]</sup>
End point description: The analysis population was the PKAS. The number of samples as well sampling times depended on the age of the participant (aged 5-less than 9 years old: 4 samples; aged 9-less than 12 years old: 6 samples; aged 12-less than 18 years old: 7 samples).	
End point type	Primary
End point timeframe: Day 1 predose up to Day 7 postdose	

Notes:

[2] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: This study was written with no planned statistical analyses (statistical hypothesis testing) to be performed for any end points due to the simple design and purpose of the study.

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	6	7		
Units: hours				
arithmetic mean (standard deviation)	3.8 ( $\pm$ 1.208)	4.16 ( $\pm$ 1.055)		

## Statistical analyses

No statistical analyses for this end point

### Primary: Area under the curve extrapolated to infinity (AUCinf)

End point title	Area under the curve extrapolated to infinity (AUCinf) <sup>[3]</sup>
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End point description:

The analysis population was the PKAS. The number of samples as well sampling times depended on the age of the participant (aged 5-less than 9 years old: 4 samples; aged 9-less than 12 years old: 6 samples; aged 12-less than 18 years old: 7 samples).

End point type	Primary
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End point timeframe:

Day 1 predose up to Day 7 postdose

Notes:

[3] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: This study was written with no planned statistical analyses (statistical hypothesis testing) to be performed for any end points due to the simple design and purpose of the study.

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	7	7		
Units: ng*h/mL				
arithmetic mean (standard deviation)	1614.771 ( $\pm$ 954.6774)	831.873 ( $\pm$ 329.5083)		

## Statistical analyses

No statistical analyses for this end point

### Primary: Apparent terminal elimination half-life (t<sub>1/2</sub>)

End point title	Apparent terminal elimination half-life (t <sub>1/2</sub> ) <sup>[4]</sup>
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End point description:

The analysis population was the PKAS. The number of samples as well sampling times depended on the age of the participant (aged 5-less than 9 years old: 4 samples; aged 9-less than 12 years old: 6 samples; aged 12-less than 18 years old: 7 samples).

End point type	Primary
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End point timeframe:

Day 1 predose up to Day 7 postdose

Notes:

[4] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: This study was written with no planned statistical analyses (statistical hypothesis testing) to be performed for any end points due to the simple design and purpose of the study.

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	7	7		
Units: hours				
arithmetic mean (standard deviation)	52.877 ( $\pm$ 21.0715)	30.653 ( $\pm$ 8.275)		

## Statistical analyses

No statistical analyses for this end point

### Primary: Apparent total body clearance (CL/F)

End point title	Apparent total body clearance (CL/F) <sup>[5]</sup>
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End point description:

The analysis population was the PKAS. The number of samples as well sampling times depended on the age of the participant (aged 5-less than 9 years old: 4 samples; aged 9-less than 12 years old: 6 samples; aged 12-less than 18 years old: 7 samples).

End point type	Primary
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End point timeframe:

Day 1 predose up to Day 7 postdose

Notes:

[5] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: This study was written with no planned statistical analyses (statistical hypothesis testing) to be performed for any end points due to the simple design and purpose of the study.

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	7	7		
Units: L/h				
arithmetic mean (standard deviation)	7.707 ( $\pm$ 4.8032)	7.216 ( $\pm$ 4.0233)		

## Statistical analyses

No statistical analyses for this end point

### Primary: Apparent volume of distribution during the terminal phase (V<sub>z</sub>/F)

End point title	Apparent volume of distribution during the terminal phase (V <sub>z</sub> /F) <sup>[6]</sup>
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End point description:

The analysis population was the PKAS. The number of samples as well sampling times depended on the age of the participant (aged 5-less than 9 years old: 4 samples; aged 9-less than 12 years old: 6 samples; aged 12-less than 18 years old: 7 samples).

End point type	Primary
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End point timeframe:

Day 1 predose up to Day 7 postdose

Notes:

[6] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: This study was written with no planned statistical analyses (statistical hypothesis testing) to be performed for any end points due to the simple design and purpose of the study.

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	7	7		
Units: liters				
arithmetic mean (standard deviation)	499.397 ( $\pm$ 195.1213)	298.923 ( $\pm$ 108.4731)		

## Statistical analyses

No statistical analyses for this end point

### Primary: Area under the concentration-time curve from the time of dosing until the last measurable concentration (AUClast)

End point title	Area under the concentration-time curve from the time of dosing until the last measurable concentration (AUClast) <sup>[7]</sup>
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End point description:

The analysis population was the PKAS. The number of samples as well sampling times depended on the age of the participant (aged 5-less than 9 years old: 4 samples; aged 9-less than 12 years old: 6 samples; aged 12-less than 18 years old: 7 samples).

End point type	Primary
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End point timeframe:

Day 1 predose up to Day 7 postdose

Notes:

[7] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: This study was written with no planned statistical analyses (statistical hypothesis testing) to be performed for any end points due to the simple design and purpose of the study.

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	0 <sup>[8]</sup>	0 <sup>[9]</sup>		
Units: ng*h/mL				
arithmetic mean (standard deviation)	()	()		

Notes:

[8] - AUClast was not calculated since non-compartmental modeling was not used for PK analysis.

[9] - AUClast was not calculated since non-compartmental modeling was not used for PK analysis.

## Statistical analyses

**Secondary: Safety as assessed by adverse events (AEs), vital signs, clinical laboratory evaluations, physical examination and electrocardiograms (ECGs)**

End point title	Safety as assessed by adverse events (AEs), vital signs, clinical laboratory evaluations, physical examination and electrocardiograms (ECGs)
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## End point description:

Safety was monitored by collecting AEs, which included abnormal laboratory tests, vital signs or ECG data that were defined as an AE if the abnormality induced clinical signs or symptoms, required active intervention, interruption or discontinuation of study medication or was clinically significant in the investigator's opinion. A treatment-emergent adverse event (TEAE) was defined as an AE that occurred or worsened after study drug administration. A serious AE was any untoward medical occurrence that at any dose: Resulted in death, was life-threatening, resulted in persistent or significant disability/incapacity, resulted in congenital anomaly, or birth defect, required inpatient hospitalization or led to prolongation of hospitalization. The analysis population was the SAF, which consisted of all enrolled participants who received the dose of study drug.

End point type	Secondary
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## End point timeframe:

From the first dose of study drug up to 7 days postdose

End point values	AD-PED 5.0 mg	CH-PED 5.0 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	7	7		
Units: participants				
Participants experienced AEs	2	0		
Number of AEs	5	0		
Participants experienced drug-related AEs	0	0		
Deaths	0	0		
Participants experienced SAEs	0	0		
Participants with AEs leading to discontinuation	0	0		

**Statistical analyses**

No statistical analyses for this end point

## Adverse events

### Adverse events information

Timeframe for reporting adverse events:

From the first dose of study drug up to 7 days postdose

Assessment type	Systematic
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### Dictionary used

Dictionary name	MedDRA
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Dictionary version	13.0
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### Reporting groups

Reporting group title	AD-PED 5.0 mg
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Reporting group description:

Male and female adolescents aged 12 to less than 18 years old who received PED of 5 mg of solifenacin succinate.

Reporting group title	CH-PED 5.0 mg
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Reporting group description:

Male and female children aged 5 to less than 12 years old who received PED of 5 mg of solifenacin succinate.

Serious adverse events	AD-PED 5.0 mg	CH-PED 5.0 mg	
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 7 (0.00%)	0 / 7 (0.00%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events			

Frequency threshold for reporting non-serious adverse events: 0 %

Non-serious adverse events	AD-PED 5.0 mg	CH-PED 5.0 mg	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	2 / 7 (28.57%)	0 / 7 (0.00%)	
Psychiatric disorders			
Anxiety			
subjects affected / exposed	1 / 7 (14.29%)	0 / 7 (0.00%)	
occurrences (all)	4	0	
Renal and urinary disorders			
Micturition urgency			
subjects affected / exposed	1 / 7 (14.29%)	0 / 7 (0.00%)	
occurrences (all)	1	0	



## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
16 March 2012	The reason for the substantial amendment was to clarify: the terminology of the exclusion criteria, the analysis of pharmacokinetics, the study design and the dose rationale, reporting of SAEs, the safety assessment, the test drug concentration and the events always considered to be serious. Two new exclusion criteria, clinical research contact information, and reference to a relevant newly completed study (Study 905-CL-075) were added.

Notes:

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### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

None reported