



## Clinical trial results:

### A PHASE 1 OPEN-LABEL, MULTICENTER, SINGLE AND MULTIPLE ASCENDING DOSE STUDY TO EVALUATE PHARMACOKINETICS, SAFETY, AND TOLERABILITY OF LURASIDONE IN SUBJECTS 6 TO 17 YEARS OLD WITH SCHIZOPHRENIA SPECTRUM, BIPOLAR SPECTRUM, AUTISTIC SPECTRUM DISORDER, OR OTHER PSYCHIATRIC DISORDERS

#### Summary

EudraCT number	2013-001523-39
Trial protocol	Outside EU/EEA
Global end of trial date	06 May 2013

#### Results information

Result version number	v1
This version publication date	11 July 2016
First version publication date	30 May 2014

#### Trial information

##### Trial identification

Sponsor protocol code	D1050300
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##### Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT01620060
WHO universal trial number (UTN)	-

Notes:

#### Sponsors

Sponsor organisation name	Sunovion Pharmaceuticals Inc.
Sponsor organisation address	One Bridge Plaza North Suite 510, Fort Lee, NJ, United States, 07024
Public contact	Yu-Yuan Chiu, Sunovion Pharmaceuticals Inc., 001 201228-8178, Yu-Yuan.Chiu@Sunovion.com
Scientific contact	Yu-Yuan Chiu, Sunovion Pharmaceuticals Inc., 001 201228-8178, Yu-Yuan.Chiu@Sunovion.com

Notes:

#### Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	Yes
EMA paediatric investigation plan number(s)	EMA-001230-PIP01-11
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?	No

Notes:

## Results analysis stage

Analysis stage	Final
Date of interim/final analysis	04 June 2013
Is this the analysis of the primary completion data?	Yes
Primary completion date	06 May 2013
Global end of trial reached?	Yes
Global end of trial date	06 May 2013
Was the trial ended prematurely?	No

Notes:

## General information about the trial

Main objective of the trial:

To characterize the pharmacokinetics (PK) and assess safety and tolerability of single and multiple oral doses of 20, 40, 80, 120, or 160 mg/day lurasidone in subjects 6 to 17 years old with schizophrenia spectrum, bipolar spectrum, autistic spectrum disorder, or other psychiatric disorders

Protection of trial subjects:

None

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	19 June 2012
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	Yes

Notes:

## Population of trial subjects

### Subjects enrolled per country

Country: Number of subjects enrolled	United States: 105
Worldwide total number of subjects	105
EEA total number of subjects	0

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)	49
Adolescents (12-17 years)	56
Adults (18-64 years)	0
From 65 to 84 years	0

85 years and over	0
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## Subject disposition

### Recruitment

Recruitment details:

A Phase I, open-label, multicenter, United States only study. Pediatric subjects with schizophrenia spectrum, bipolar spectrum, autistic spectrum or other psychiatric disorders were enrolled. Study started enrolment on 19Jun2012.

### Pre-assignment

Screening details:

All subjects received a single dose of lurasidone followed by a 2-day washout period, then once-daily dosing of lurasidone for 7 days (20 mg through 120 mg cohorts) or 9 days (160 mg cohort)

### Period 1

Period 1 title	Overall Period Trial (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>	Lurasidone 20 mg oral tablets

Arm description:

Lurasidone 20 mg oral tablets

Arm type	Experimental
Investigational medicinal product name	Lurasidone
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

once daily

<b>Arm title</b>	Lurasidone 40 mg oral tablets
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Arm description:

Lurasidone 40 mg oral tablets

Arm type	Experimental
Investigational medicinal product name	Lurasidone
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

once daily

<b>Arm title</b>	Lurasidone 80 mg oral tablets
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Arm description:

Lurasidone 80 mg oral tablets

Arm type	Experimental
Investigational medicinal product name	Lurasidone
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:  
once daily

<b>Arm title</b>	Lurasidone 120 mg oral tablets
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Arm description:

Lurasidone 120 mg oral tablets

Arm type	Experimental
Investigational medicinal product name	Lurasidone
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

once daily

<b>Arm title</b>	Lurasidone 160 mg oral tablets
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Arm description:

Lurasidone 160 mg oral tablets

Arm type	Experimental
Investigational medicinal product name	Lurasidone
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

once daily

<b>Number of subjects in period 1</b>	Lurasidone 20 mg oral tablets	Lurasidone 40 mg oral tablets	Lurasidone 80 mg oral tablets
Started	20	25	19
Completed	19	21	18
Not completed	1	4	1
Consent withdrawn by subject	-	-	-
Did not comply with Study procedures	1	-	-
Adverse event, non-fatal	-	3	1
family emergency	-	-	-
Per Sponsor Decision	-	-	-
Protocol deviation	-	1	-

<b>Number of subjects in period 1</b>	Lurasidone 120 mg oral tablets	Lurasidone 160 mg oral tablets
Started	25	16
Completed	18	14
Not completed	7	2
Consent withdrawn by subject	-	1

Did not comply with Study procedures	-	-
Adverse event, non-fatal	4	1
family emergency	1	-
Per Sponsor Decision	2	-
Protocol deviation	-	-

## Baseline characteristics

### Reporting groups

Reporting group title	Lurasidone 20 mg oral tablets
Reporting group description:	Lurasidone 20 mg oral tablets
Reporting group title	Lurasidone 40 mg oral tablets
Reporting group description:	Lurasidone 40 mg oral tablets
Reporting group title	Lurasidone 80 mg oral tablets
Reporting group description:	Lurasidone 80 mg oral tablets
Reporting group title	Lurasidone 120 mg oral tablets
Reporting group description:	Lurasidone 120 mg oral tablets
Reporting group title	Lurasidone 160 mg oral tablets
Reporting group description:	Lurasidone 160 mg oral tablets

Reporting group values	Lurasidone 20 mg oral tablets	Lurasidone 40 mg oral tablets	Lurasidone 80 mg oral tablets
Number of subjects	20	25	19
Age categorical			
Units: Subjects			
6-9 years old	5	5	4
10-12 years old	6	7	5
13-15 years old	5	7	5
16-17 years old	4	6	5
Gender categorical			
Units: Subjects			
Female	8	10	6
Male	12	15	13

Reporting group values	Lurasidone 120 mg oral tablets	Lurasidone 160 mg oral tablets	Total
Number of subjects	25	16	105
Age categorical			
Units: Subjects			
6-9 years old	6	0	20
10-12 years old	5	6	29
13-15 years old	8	6	31
16-17 years old	6	4	25
Gender categorical			
Units: Subjects			
Female	8	5	37
Male	17	11	68

## End points

### End points reporting groups

Reporting group title	Lurasidone 20 mg oral tablets
Reporting group description:	Lurasidone 20 mg oral tablets
Reporting group title	Lurasidone 40 mg oral tablets
Reporting group description:	Lurasidone 40 mg oral tablets
Reporting group title	Lurasidone 80 mg oral tablets
Reporting group description:	Lurasidone 80 mg oral tablets
Reporting group title	Lurasidone 120 mg oral tablets
Reporting group description:	Lurasidone 120 mg oral tablets
Reporting group title	Lurasidone 160 mg oral tablets
Reporting group description:	Lurasidone 160 mg oral tablets

### Primary: Lurasidone PK profile

End point title	Lurasidone PK profile
End point description:	Primary PK parameters: C <sub>max</sub> , AUC <sub>last</sub> , and AUC <sub>0-∞</sub> (Day 1), and C <sub>max</sub> and AUC <sub>0-24</sub> (Day 10 or Day 12)
End point type	Primary
End point timeframe:	Day 1 through Day 12

End point values	Lurasidone 20 mg oral tablets	Lurasidone 40 mg oral tablets	Lurasidone 80 mg oral tablets	Lurasidone 120 mg oral tablets
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	20	25	19	25
Units: ng/ml				
arithmetic mean (standard deviation)				
C <sub>max</sub> ng/ml (Day 1)	24.4 (± 14.1)	38.3 (± 22.4)	68.2 (± 37.5)	0 (± 0)
C <sub>max</sub> ng/ml (Day 10 or Day 12)	30 (± 18)	36.2 (± 17.5)	80 (± 59.6)	94.2 (± 46.6)
AUC <sub>0-24</sub> ng.h/ml (Day 10 or Day 12)	115 (± 72.2)	154 (± 67.4)	387 (± 194)	494 (± 271)
AUC <sub>last</sub> ng.h/ml (Day1)	78 (± 44.9)	140 (± 65.4)	300 (± 140)	0 (± 0)
AUC <sub>0-∞</sub> ng.h/ml (Day 1)	83.8 (± 48.3)	153 (± 69.8)	328 (± 163)	0 (± 0)

End point values	Lurasidone 160 mg oral tablets			
Subject group type	Reporting group			
Number of subjects analysed	16			



Units: ng/ml				
arithmetic mean (standard deviation)				
Cmax ng/ml (Day 1)	0 (± 0)			
Cmax ng/ml (Day 10 or Day 12)	99.7 (± 44.3)			
AUC0-24 ng.h/ml (Day 10 or Day 12)	590 (± 227)			
AUClast ng.h/ml (Day1)	0 (± 0)			
AUC0-∞ ng.h/ml (Day 1)	0 (± 0)			

## Statistical analyses

Statistical analysis title	Discriptive Summary
Comparison groups	Lurasidone 20 mg oral tablets v Lurasidone 40 mg oral tablets v Lurasidone 80 mg oral tablets v Lurasidone 120 mg oral tablets v Lurasidone 160 mg oral tablets
Number of subjects included in analysis	105
Analysis specification	Pre-specified
Analysis type	non-inferiority
P-value	= 1
Method	Discriptive Summary
Parameter estimate	Discriptive Summary

## Adverse events

### Adverse events information

Timeframe for reporting adverse events:

June 19, 2012 through May 6, 2013

Assessment type	Systematic
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### Dictionary used

Dictionary name	MedDRA
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Dictionary version	15.0
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### Reporting groups

Reporting group title	Lurasidone 20 mg oral tablets
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Reporting group description:

Lurasidone 20 mg oral tablets

Reporting group title	Lurasidone 40 mg oral tablets
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Reporting group description:

Lurasidone 40 mg oral tablets

Reporting group title	Lurasidone 80 mg oral tablets
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Reporting group description:

Lurasidone 80 mg oral tablets

Reporting group title	Lurasidone 120 mg oral tablets
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Reporting group description:

Lurasidone 120 mg oral tablets

Reporting group title	Lurasidone 160 mg oral tablets
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Reporting group description:

Lurasidone 160 mg oral tablets

Serious adverse events	Lurasidone 20 mg oral tablets	Lurasidone 40 mg oral tablets	Lurasidone 80 mg oral tablets
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 20 (0.00%)	0 / 25 (0.00%)	2 / 19 (10.53%)
number of deaths (all causes)	0	0	0
number of deaths resulting from adverse events	0	0	0
Nervous system disorders			
Parkinsonism			
subjects affected / exposed	0 / 20 (0.00%)	0 / 25 (0.00%)	1 / 19 (5.26%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Dystonia			
subjects affected / exposed	0 / 20 (0.00%)	0 / 25 (0.00%)	1 / 19 (5.26%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0

<b>Serious adverse events</b>	Lurasidone 120 mg oral tablets	Lurasidone 160 mg oral tablets	
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 25 (0.00%)	0 / 16 (0.00%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	
Nervous system disorders			
Parkinsonism			
subjects affected / exposed	0 / 25 (0.00%)	0 / 16 (0.00%)	
occurrences causally related to treatment / all	0 / 0	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Dystonia			
subjects affected / exposed	0 / 25 (0.00%)	0 / 16 (0.00%)	
occurrences causally related to treatment / all	0 / 0	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	

Frequency threshold for reporting non-serious adverse events: 3 %

<b>Non-serious adverse events</b>	Lurasidone 20 mg oral tablets	Lurasidone 40 mg oral tablets	Lurasidone 80 mg oral tablets
Total subjects affected by non-serious adverse events			
subjects affected / exposed	4 / 20 (20.00%)	17 / 25 (68.00%)	15 / 19 (78.95%)
Nervous system disorders			
Somnolence			
subjects affected / exposed	0 / 20 (0.00%)	11 / 25 (44.00%)	7 / 19 (36.84%)
occurrences (all)	0	27	17
Sedation			
subjects affected / exposed	0 / 20 (0.00%)	3 / 25 (12.00%)	5 / 19 (26.32%)
occurrences (all)	0	5	9
Dystonia			
subjects affected / exposed	0 / 20 (0.00%)	0 / 25 (0.00%)	0 / 19 (0.00%)
occurrences (all)	0	0	0
Gastrointestinal disorders			
Nausea			
subjects affected / exposed	1 / 20 (5.00%)	3 / 25 (12.00%)	6 / 19 (31.58%)
occurrences (all)	1	4	7
Vomiting			

subjects affected / exposed occurrences (all)	0 / 20 (0.00%) 0	4 / 25 (16.00%) 4	4 / 19 (21.05%) 5
Abdominal pain upper subjects affected / exposed occurrences (all)	1 / 20 (5.00%) 1	0 / 25 (0.00%) 0	1 / 19 (5.26%) 1
Psychiatric disorders Anxiety subjects affected / exposed occurrences (all)	0 / 20 (0.00%) 0	0 / 25 (0.00%) 0	1 / 19 (5.26%) 1

<b>Non-serious adverse events</b>	Lurasidone 120 mg oral tablets	Lurasidone 160 mg oral tablets	
Total subjects affected by non-serious adverse events subjects affected / exposed	24 / 25 (96.00%)	16 / 16 (100.00%)	
Nervous system disorders Somnolence subjects affected / exposed occurrences (all)	16 / 25 (64.00%) 50	10 / 16 (62.50%) 10	
Sedation subjects affected / exposed occurrences (all)	7 / 25 (28.00%) 13	4 / 16 (25.00%) 8	
Dystonia subjects affected / exposed occurrences (all)	4 / 25 (16.00%) 5	2 / 16 (12.50%) 2	
Gastrointestinal disorders Nausea subjects affected / exposed occurrences (all)	2 / 25 (8.00%) 2	6 / 16 (37.50%) 6	
Vomiting subjects affected / exposed occurrences (all)	5 / 25 (20.00%) 6	3 / 16 (18.75%) 3	
Abdominal pain upper subjects affected / exposed occurrences (all)	4 / 25 (16.00%) 4	0 / 16 (0.00%) 0	
Psychiatric disorders Anxiety subjects affected / exposed occurrences (all)	1 / 25 (4.00%) 1	4 / 16 (25.00%) 4	



## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

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### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

Limitations of the trial such as small numbers of subjects analysed or technical problems leading to unreliable data.

None
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Notes: