Clinical trial results:

Effect of glucagon-like peptide 1 (GLP-1) based diabetes medication on blood flow velocity in persons without cerebrovascular disease.

Summary

EudraCT number	2016-001221-14
Trial protocol	DK
Global end of trial date	02 February 2017

Results information

Result version number	v1 (current)
This version publication date	21 November 2020
First version publication date	21 November 2020

Trial information

Trial identification

Sponsor protocol code	E.G.R.A.B.I.N.S1

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT02838589
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Herlev Gentofte Hospital
Sponsor organisation address	Borgmester Ib Juuls Vej 1, Herlev, Denmark, 2730
Public contact	Christina Rostrup Kruuse, Herlev Gentofte Hospital, 45 38681233 , christina.rostrup.kruuse@regionh.dk
Scientific contact	Christina Rostrup Kruuse, Herlev Gentofte Hospital, 45 38681233 , christina.rostrup.kruuse@regionh.dk

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?	No

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	07 April 2018
Is this the analysis of the primary completion data?	Yes
Primary completion date	02 February 2017
Global end of trial reached?	Yes
Global end of trial date	02 February 2017
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:	
The main objective is to investigate the effect of a single dose of 5 mikrogram GLP-1 receptor agonist (exenatide) on cerebral blood flow velocity in humans without cerebrovascular disease.	
Protection of trial subjects:	
During the trial days, trial participants were monitored thoroughly with heart rate and blood pressure. They were asked how they felt every hour during the trial days and if they experienced any side effects. After the trial days, they were asked to complete a side effect form and then hand it in to the investigator. They were also given the phone number to the Department of Neurology, Herlev Gentofte Hospital (sponsor) which they could call to if they experienced any side effects or had any other trouble. If the participants experienced pain or distress during the trial days, we talked about it and tried to accomodate their wishes to see if we could minimize pain.	
Background therapy: -	
Evidence for comparator: -	
Actual start date of recruitment	24 August 2016
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	Denmark: 36
Worldwide total number of subjects	36
EEA total number of subjects	36

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)	0
Adolescents (12-17 years)	0
Adults (18-64 years)	25
From 65 to 84 years	11

85 years and over	0	

Subject disposition

Recruitment

Recruitment details:

Participants were recruited from "http://www.forsoegsperson.dk", "www.sundhed.dk", and through advertisement. Participants were recruited year 2016 and 2017.

Pre-assignment

Screening details:

Screening was done by a medical doctor and a medical student.

Period 1

Period 1 title	Overall trial (overall period)
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator, Monitor, Data analyst

Blinding implementation details:

Exenatide was given sub-cutaneus by standard medication-pen. Placebo was given sub-cutaneus by a small syringe with a matching needle. Medication/placebo were given by a study nurse who was not blinded. The study nurse was not implemented in other parts of the trial. The participants were blindfolded when medication and placebo were delivered. Hence, investigator, subjects, data analyst and monitor were blinded.

Arms

Are arms mutually exclusive?	Yes
Arm title	Exenatide

Arm description:

Parallel-arm trial.
Exenatide (5 ug) was given as a single dose.

Arm type	Experimental
Investigational medicinal product name	Exenatide
Investigational medicinal product code	
Other name	Byetta
Pharmaceutical forms	Suspension for injection in pre-filled pen
Routes of administration	Subcutaneous use

Dosage and administration details:

Dosage: 5 micrograms (ug)
Administration details: Sub-cutaneus injection by pen

Arm title	Placebo

Arm description:

Placebo (isotonic salt-water) was given sub-cutaneus by a small syrringe.

Arm type	Placebo
Investigational medicinal product name	Placebo
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Suspension for injection
Routes of administration	Subcutaneous use

Dosage and administration details:

Dosage: 0,05 ml
Administration detail: Sub-cutaneus injection

Number of subjects in period 1	Exenatide	Placebo
Started	21	15
Completed	15	15
Not completed	6	0
Medication failure	6	-

Baseline characteristics

Reporting groups

Reporting group title	Overall trial

Reporting group description: -

Reporting group values	Overall trial	Total	
Number of subjects	36	36	
Age categorical			
Units: Subjects			
In utero	0	0	
Preterm newborn infants (gestational age < 37 wks)	0	0	
Newborns (0-27 days)	0	0	
Infants and toddlers (28 days-23 months)	0	0	
Children (2-11 years)	0	0	
Adolescents (12-17 years)	0	0	
Adults (18-64 years)	25	25	
From 65-84 years	11	11	
85 years and over	0	0	
Age continuous			
Units: years			
arithmetic mean	62.3		
standard deviation	± 7.7	-	
Gender categorical			
Units: Subjects			
Female	18	18	
Male	18	18	

End points

End points reporting groups

Reporting group title	Exenatide
Reporting group description:	
Parallel-arm trial. Exenatide (5 ug) was given as a single dose.	
Reporting group title	Placebo
Reporting group description:	
Placebo (isotonic salt-water) was given sub-cutaneus by a small syrringe.	
Subject analysis set title	Exenatide - baseline
Subject analysis set type	Sub-group analysis
Subject analysis set description:	
Exenatide group at baseline	
Subject analysis set title	Exenatide - 180 minutes
Subject analysis set type	Sub-group analysis
Subject analysis set description:	
Exenatide group at 180 minutes.	
Subject analysis set title	Placebo - baseline
Subject analysis set type	Sub-group analysis
Subject analysis set description:	
Placebo group at baseline.	
Subject analysis set title	Placebo - 180 minutes
Subject analysis set type	Sub-group analysis
Subject analysis set description:	
Placebo group at 180 minutes.	

Primary: Transcranial Doppler

End point title	Transcranial Doppler
End point description:	
Changes in mean blood flow velocity in the middle cerebral artery before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.	
End point type	Primary
End point timeframe:	
We performed TCD measurements at baseline and 180 minutes post-medication.	

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: cm/sec				
arithmetic mean (standard deviation)	68.5 (± 11.5)	68.7 (± 12.1)	61.8 (± 9.1)	65.8 (± 12.9)

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	
Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood pressure - diastolic

End point title	Blood pressure - diastolic
End point description:	
Changes in blood pressure before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.	
End point type	Secondary
End point timeframe:	
We performed blood pressure measurements at baseline and 180 minutes post-medication.	

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: mmHg				
arithmetic mean (standard deviation)	77.9 (± 11.3)	80.3 (± 12.2)	77.5 (± 6.1)	80.7 (± 8.9)

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	
Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood pressure - systolic

End point title	Blood pressure - systolic

End point description:

Changes in blood pressure before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

We performed blood pressure measurements at baseline and 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: mmHg				
arithmetic mean (standard deviation)	133.9 (± 19.4)	137.5 (± 20.1)	129.2 (± 10.2)	135.4 (± 14.2)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: EndoPat - Regional hyperaemia index (RHI)

End point title	EndoPat - Regional hyperaemia index (RHI)

End point description:

Changes in regional hyperemia index before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

We performed EndoPAT measurements at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: no unit				
arithmetic mean (standard deviation)	2.0 (± 0.5)	2.2 (± 0.5)	2.0 (± 0.3)	2.3 (± 0.4)

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	
Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: EndoPat - augmentation index standardized to a heart rate of 75 (AI@75)

End point title	EndoPat - augmentation index standardized to a heart rate of 75 (AI@75)
End point description:	
Changes in EndoPAT - augmentation index standardized to a heart rate of 75 before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.	
End point type	Secondary
End point timeframe:	
We performed EndoPAT measurements at baseline and after 180 minutes post-medication.	

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: no unit				
arithmetic mean (standard deviation)	11.3 (± 14.1)	12.8 (± 15.2)	1.9 (± 12.6)	4.5 (± 13.6)

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	

Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Ankle brachial index

End point title	Ankle brachial index

End point description:

Changes in ankel brachial index before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

We performed ankle brachial index measurements at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: mmHg				
arithmetic mean (standard deviation)	1.1 (± 0.1)	1.1 (± 0.1)	1.2 (± 0.1)	1.2 (± 0.1)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - 180 minutes v Placebo - baseline v Exenatide - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood glucose

End point title	Blood glucose

End point description:

Changes in blood glucose before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation

for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

Blood glucose were collected at baseline180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: mmol/l				
arithmetic mean (standard deviation)	5.5 (± 0.5)	4.9 (± 0.3)	5.4 (± 0.5)	5.22 (± 0.4)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - baseline v Placebo - baseline v Exenatide - 180 minutes v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood insulin

End point title	Blood insulin

End point description:

Changes in blood insulin before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

We performed blood insulin measurements at baseline and 180 minutes postmedication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pmol/l				
arithmetic mean (standard deviation)	42.5 (± 47.3)	41.2 (± 31.0)	32.8 (± 19.6)	34.5 (± 18.0)

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	
Comparison groups	Exenatide - baseline v Placebo - baseline v Exenatide - 180 minutes v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood c-peptide

End point title	Blood c-peptide
End point description:	
Blood c-peptide before exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at baseline.	
End point type	Secondary
End point timeframe:	
We performed blood c-peptide measurments at baseline.	

End point values	Exenatide - baseline	Placebo - baseline		
Subject group type	Subject analysis set	Subject analysis set		
Number of subjects analysed	15	15		
Units: pmol/l				
arithmetic mean (standard deviation)	459.2 (± 238.2)	404.0 (± 159.1)		

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	
Comparison groups	Exenatide - baseline v Placebo - baseline

Number of subjects included in analysis	30
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood sample - E-selectin

End point title	Blood sample - E-selectin

End point description:

Changes in biomarker concentration before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

Blood samples were collected at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pg/ml				
arithmetic mean (standard deviation)	4429.7 (± 1859.4)	4047.7 (± 2477.5)	4208.9 (± 2555.4)	4348.4 (± 2915.7)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood sample - TNF-alpha

End point title	Blood sample - TNF-alpha

End point description:

Changes in biomarker concentration before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

Blood samples were collected at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pg/ml				
arithmetic mean (standard deviation)	1.8 (± 0.8)	1.9 (± 0.7)	1.6 (± 0.4)	1.4 (± 0.4)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood sample - IL-6

End point title	Blood sample - IL-6

End point description:

Changes in biomarker concentration before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

Blood samples were collected at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pg/ml				
arithmetic mean (standard deviation)	0.8 (± 0.5)	1.8 (± 0.9)	0.8 (± 0.4)	1.8 (± 1.1)

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	
Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood sample - IL-1beta

End point title	Blood sample - IL-1beta
End point description:	
Changes in biomarker concentration before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.	
End point type	Secondary
End point timeframe:	
Blood samples were collected at baseline and after 180 minutes post-medication.	

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pg/ml				
arithmetic mean (standard deviation)	0.07 (± 0.2)	0.03 (± 0.1)	0.01 (± 0.03)	0.01 (± 0.03)

Statistical analyses

Statistical analysis title	T-test
Statistical analysis description:	
We performed a paired sample T-test.	
Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes

Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood sample - VCAM1

End point title	Blood sample - VCAM1

End point description:

Changes in biomarker concentration before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

Blood samples were collected at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pg/ml				
arithmetic mean (standard deviation)	1079734.5 (± 316840.2)	1088737.9 (± 333159.7)	1171249.3 (± 574173.7)	1006405.1 (± 371746.1)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood sample - ICAM-1

End point title	Blood sample - ICAM-1

End point description:

Changes in biomarker concentration before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

Blood samples were collected at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pg/ml				
arithmetic mean (standard deviation)	730279.6 (± 143120.0)	747610.5 (± 152708.8)	694218.7 (± 328253.2)	698376.5 (± 306442.4)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Secondary: Blood sample - VEGF

End point title	Blood sample - VEGF

End point description:

Changes in biomarker concentration before and after exenatide/placebo for each subject were calculated and then further used for statistical analysis. Here, results are shown as the mean value and standard deviation for both groups at the different timepoints.

End point type	Secondary

End point timeframe:

Blood samples were collected at baseline and after 180 minutes post-medication.

End point values	Exenatide - baseline	Exenatide - 180 minutes	Placebo - baseline	Placebo - 180 minutes
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	15	15	15	15
Units: pg/ml				
arithmetic mean (standard deviation)	22.2 (± 11.9)	29.3 (± 18.6)	21.7 (± 12.3)	25.0 (± 16.5)

Statistical analyses

Statistical analysis title	T-test

Statistical analysis description:

We performed a paired sample T-test.

Comparison groups	Exenatide - baseline v Exenatide - 180 minutes v Placebo - baseline v Placebo - 180 minutes
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	other
P-value	< 0.05
Method	t-test, 2-sided

Adverse events

Adverse events information

Timeframe for reporting adverse events:

During the whole trial period.

Adverse event reporting additional description:

Questionaire given to subjects. Subjects were asked to note all adverse events for 24 hours after medication administration.

Assessment type	Systematic

Dictionary used

Dictionary name	Events not coded
Dictionary version	N/A

Reporting groups

Reporting group title	Exenatide

Reporting group description:

Exenatide (5 ug), single dose.

Reporting group title	Placebo

Reporting group description:

Placebo, single dose.

Reporting group title	Exenatide - medication failure

Reporting group description:

Patients who were supposed to recieve exenatide, but medication were given incorrectly which resulted in that no medication or a low dose were given instead.

Serious adverse events	Exenatide	Placebo	Exenatide - medication failure
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 15 (0.00%)	0 / 15 (0.00%)	0 / 6 (0.00%)
number of deaths (all causes)	0	0	0
number of deaths resulting from adverse events			

Frequency threshold for reporting non-serious adverse events: 0.05 %

Non-serious adverse events	Exenatide	Placebo	Exenatide - medication failure
Total subjects affected by non-serious adverse events			
subjects affected / exposed	12 / 15 (80.00%)	7 / 15 (46.67%)	2 / 6 (33.33%)
Nervous system disorders			
Headache			
subjects affected / exposed	8 / 15 (53.33%)	5 / 15 (33.33%)	1 / 6 (16.67%)
occurrences (all)	8	5	1
Dizziness			

subjects affected / exposed	1 / 15 (6.67%)	2 / 15 (13.33%)	0 / 6 (0.00%)
occurrences (all)	1	2	0
General disorders and administration site conditions			
Temperature perception increased			
subjects affected / exposed	1 / 15 (6.67%)	0 / 15 (0.00%)	0 / 6 (0.00%)
occurrences (all)	1	0	0
Light-headedness			
subjects affected / exposed	0 / 15 (0.00%)	0 / 15 (0.00%)	1 / 6 (16.67%)
occurrences (all)	0	0	1
Uneasy			
subjects affected / exposed	1 / 15 (6.67%)	0 / 15 (0.00%)	0 / 6 (0.00%)
occurrences (all)	1	0	0
Gastrointestinal disorders			
Nausea			
subjects affected / exposed	3 / 15 (20.00%)	3 / 15 (20.00%)	2 / 6 (33.33%)
occurrences (all)	3	3	2
Abdominal pain			
subjects affected / exposed	3 / 15 (20.00%)	0 / 15 (0.00%)	0 / 6 (0.00%)
occurrences (all)	3	0	0
Flatulence			
subjects affected / exposed	2 / 15 (13.33%)	0 / 15 (0.00%)	0 / 6 (0.00%)
occurrences (all)	2	0	0
Psychiatric disorders			
Fatigue			
subjects affected / exposed	3 / 15 (20.00%)	2 / 15 (13.33%)	1 / 6 (16.67%)
occurrences (all)	3	2	1

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol?   No

Interruptions (globally)

Were there any global interruptions to the trial?   No

Limitations and caveats

 None reported