# Efficacy and safety of oral semaglutide versus placebo in children and adolescents with type 2 diabetes

**21/11/2024 21:51:23**

## Main Information

**Primary registry identifying number**
LBCTR2021014721

**Protocol number**
NN9924-4437

**MOH registration number**

**Study registered at the country of origin**
Yes

**Study registered at the country of origin: Specify**

**Type of registration**
Prospective

**Type of registration: Justify**
N/A

**Date of registration in national regulatory agency**
12/01/2021

**Primary sponsor**
Novo Nordisk A/S

**Primary sponsor: Country of origin**
Denmark

**Date of registration in primary registry**
03/04/2021

**Date of registration in national regulatory agency**
12/01/2021

**Public title**
Efficacy and safety of oral semaglutide versus placebo in children and adolescents with type 2 diabetes

**Acronym**
PIONEER TEENS

**Scientific title**
Efficacy and safety of oral semaglutide versus placebo both in combination with metformin and/or basal insulin in children and adolescents with type 2 diabetes

**Acronym**
PIONEER TEENS

**Brief summary of the study: English**

PIONEER TEENS (NN9924-4437) will be conducted to confirm the efficacy and safety of oral semaglutide in the paediatric population to address the unmet need for treatment of children and adolescents 10 to <18 years of age with type 2 diabetes. Further, the trial will explore the beta-cell function-preserving effects of oral semaglutide during treatment and after a period of 12 weeks off-trial product following the 52-week treatment period.

**Brief summary of the study: Arabic**

تهدف هذه الدراسة لمقارنة دوائين لعلاج داء السكري من النوع الثاني سيماغلوتيد دواء جديد ودواء وهمي
سيقوم الباحثون باختبار سيماغلوتيد لمعرفة مدى فعاليته مقارنة بالدواء الوهمي.
سبق أن اختبر الباحثون سيماغلوتيد على البالغين. ستختبر الدراسة أيضاً ما إذا كان سيماغلوتيد آمناً للأطفال والمراهقين.

**Health conditions/problem studied: Specify**

Type two diabetes in paediatric population

**Interventions: Specify**

Subjects will, after a 2-week screening period, be randomised in a 1:1 manner to receive either oral semaglutide or placebo.

**Key inclusion and exclusion criteria: Inclusion criteria**

Inclusion criteria:
Subjects are eligible to be included in the trial only if all of the following criteria apply:
1. Informed consent from parent(s) or legally acceptable representative (LAR) and child assent from the subject obtained before any trial-related activities. Trial-related activities are any procedures that are carried out as part of the trial, including activities to determine suitability for the trial.
2. Male or female, aged 10 to <18 years at the day of randomisation
3. Diagnosed with type 2 diabetes mellitus according to the ADA criteria and treated with:
• stable metformin dose* or
• stable metformin dose* and a stable dose of basal insulin** or
• stable dose of basal insulin**
*stable metformin dose is defined as at least 1000 mg daily or the maximum tolerated dose for 56 days or longer prior to screening.
**stable dose of basal insulin is defined as basal insulin treatment ≥30 days prior to screening, compared to the dose at screening, dose adjustments of ± 25% are allowed.
4. HbA1c 6.5%−11.0% (47−97 mmol/mol) (both inclusive)
5. Ability and willingness to adhere to the protocol including self-measurement of plasma glucose according to the protocol.

**Key inclusion and exclusion criteria: Gender**

Both

**Key inclusion and exclusion criteria: Specify gender**

**Key inclusion and exclusion criteria: Age minimum**

10

**Key inclusion and exclusion criteria: Age maximum**

17

**Key inclusion and exclusion criteria: Exclusion criteria**

Exclusion criteria:
Subjects are excluded from the trial if any of the following criteria apply:
1. Known or suspected hypersensitivity to trial product(s) or related products.
2. Previous participation in this trial. Participation is defined as randomisation. Re-screening is allowed, however there must be at least 90 days between screenings.
3. Female who is pregnant, breast-feeding or intends to become pregnant or is of childbearing potential and not using highly effective contraceptive methods, refer to Appendix 5.
4. Receipt of any investigational medicinal product within 30 days before screening.
5. Any disorder, which, in the opinion of the investigator, might jeopardise subject's safety or compliance with the protocol.
6. Any laboratory safety parameter at screening outside the below extended laboratory ranges:
• ALT ≥2.5 times the upper normal limit (UNL)
• creatinine >UNL for age in children unless renal function is proven normal by further assessments at the discretion of the investigator
• C-peptide <1.5 ng/mL
• calcitonin ≥50 ng/L
7. Personal or first degree relative(s) history of multiple endocrine neoplasia type 2 or medullary thyroid carcinoma.
8. History or presence of pancreatitis (acute or chronic).
9. Known history of heart disease (including history of clinically significant arrhythmias or conduction delays on ECG) within 180 days of visit 1, new clinically significant arrhythmias or conduction delays on ECG identified at visit 1.
10. Known hypoglycaemic unawareness as indicated by the investigator according to Clarke's questionnaire question 82.
11. Recurrent severe hypoglycaemic episodes within the last year as judged by the investigator.
12. Uncontrolled hypertension, treated or untreated, >99th percentile for age and gender in children and adolescents. If "white coat hypertension" is suspected at visit 1 a repeat blood pressure measurement either during visit 1 or at visit 2 prior to other trial related activities is allowed, with the last measurement being conclusive.
13. Treatment with any medication for the indication of diabetes other than stated in the inclusion criteria in a period of 90 days before screening. However, short-term treatment with bolus insulin for a metabolic decompensation/intercurrent illness for a maximum of 14 days prior to the day of visit 1 is allowed.
14. Uncontrolled and potentially unstable diabetic retinopathy or maculopathy documented by an ophthalmologic examination of the retina preferably supported by a fundus photography or optical coherence tomography within the past 90 days prior to screening or in the period between screening and randomisation (visit 2). Pharmacological pupil-dilation is a requirement unless using a digital fundus photography camera specified for non-dilated examination.
15. Presence or history of malignant neoplasm within 5 years prior to the day of screening. Basal and squamous cell skin cancer and any carcinoma in-situ is allowed.
16. Diagnosis of type 1 diabetes
17. Positive insulinoma associated-protein 2 (IA-2) antibodies or anti-glutamic acid decarboxylase (anti-GAD) antibodies.
18. Maturity onset diabetes of the young (MODY).
19. History of major surgical procedures involving the stomach potentially affecting absorption of trial product (e.g. subtotal and total gastrectomy, sleeve gastrectomy or gastric bypass surgery).

**Type of study**

Interventional

**Type of intervention**

Pharmaceutical

**Type of intervention: Specify type**

N/A

**Trial scope**
Safety

**Trial scope: Specify scope**
N/A

**Study design: Allocation**
Randomized controlled trial

**Study design: Masking**
Blinded (masking used)

**Study design: Control**
Placebo

**Study phase**
3

**Study design: Purpose**
Treatment

**Study design: Specify purpose**
N/A

**Study design: Assignment**
Parallel

**Study design: Specify assignment**
N/A

**IMP has market authorization**
Yes, Worldwide

**IMP has market authorization: Specify**
27 EU countries and UK

**Name of IMP**
Oral Semaglutide

**Year of authorization**
2020

**Month of authorization**
4

**Type of IMP**
Others

**Pharmaceutical class**
Anti-Diabetic

**Therapeutic indication**
Type Two Diabetes in paediatric patients

**Therapeutic benefit**
PIONEER TEENS (NN9924-4437) will be conducted to confirm the efficacy and safety of oral semaglutide in the paediatric population to address the unmet need for treatment of children and adolescents 10 to <18 years of age with type 2 diabetes

**Study model**
N/A

**Study model: Explain model**
N/A

**Study model: Specify model**
N/A

**Time perspective**
N/A

**Time perspective: Explain time perspective**
N/A

**Time perspective: Specify perspective**
N/A

**Target follow-up duration**

**Target follow-up duration: Unit**

**Number of groups/cohorts**

**Biospecimen retention**

**Biospecimen description**

Samples without DNA

• HbA1c
• Fasting glucagon
• Fasting insulin
• Fasting pro-insulin
• Fasting plasma glucose (FPG)1
• Fasting pro-insulin to insulin ratio
• Fasting C-peptide
• Random C-peptide (i.e. not fasting at visit 1)
• Homeostasis model assessment (HOMA-B and HOMA-IR)
• Plasma glucose, fasting and non-fasting
• C-peptide, fasting and non-fasting
• Insulin, fasting and non-fasting
• Glucagon, fasting and non-fasting
• Cholesterol
• High density lipoprotein (HDL) cholesterol
• Low density lipoprotein (LDL) cholesterol
• Triglycerides
• Very low density lipoprotein (VLDL) cholesterol
• Erythrocytes
• Haematocrit
• Haemoglobin
• Leucocytes
• Thrombocytes
• Differential count: eosinophils, basophils, lymphocytes, monocytes, neutrophils
• Alanine Aminotransferase (ALT)2
• Albumin
• Alkaline phosphatase (ALP)
• Amylase
• Aspartate Aminotransferase (AST)
• Bilirubin (total)
• Calcium
• Creatine kinase
• Creatinine2
• Lipase
• Potassium
• Sodium
• Urea and calcium (albumin corrected urea)
• Lactate
• Insulin-like growth factor 1 (IGF-1)
• Insulin-like growth factor binding protein 3 (IGFBP-3)
• Anti-glutamic acid decarboxylase (anti-GAD) antibodies
• Insulinoma associated-protein 2 (IA-2) antibodies
• Calcitonin
• Dehydroepiandrosterone sulphate (DHEAS)
• Estradiol (for girls)
• Follicle stimulating hormone (FSH)
• Luteinizing hormone (LH)
• Prolactin
• Testosterone (for boys)
• Thyroid stimulating hormone (TSH)

**Target sample size**

132

**Actual enrollment target size**

**Date of first enrollment: Type**

Anticipated

**Date of first enrollment: Date**

31/03/2021

**Date of study closure: Type**

Anticipated

**Date of study closure: Date**

26/03/2025

**Recruitment status**

Not recruiting

**Recruitment status: Specify**

**Date of completion**

**IPD sharing statement plan**

**IPD sharing statement description**

| | |
|---|---|
| No | It will not be shared |

**Additional data URL**

U1111-1218-1527

**Admin comments**

**Trial status**

Approved

## Secondary Identifying Numbers

| Full name of issuing authority | Secondary identifying number |
|---|---|
| NA | NA |

## Sources of Monetary or Material Support

| Name |
|---|
| Novo Nordisk A/S |

## Secondary Sponsors

| Name |
|---|
| NA |

## Contact for Public/Scientific Queries

| Contact type | Contact full name | Address | Country | Telephone | Email | Affiliation |
|---|---|---|---|---|---|---|
| Public | Badiaa Masri | Sin El fil | Lebanon | 009611488664 | bams@novonordisk.com | Novo Nordisk |
| Scientific | Rita Habib | Sin El Fil | Lebanon | 009611488664 | rteb@novonordisk.com | Novo Nordisk |
| Scientific | Charles Saab | Baabda | Lebanon | 009613253944 | drcsaab@hotmail.com | Chronic Care Center |

## Centers/Hospitals Involved in the Study

| Center/Hospital name | Name of principles investigator | Principles investigator speciality | Ethical approval |
|---|---|---|---|
| Chronic Care Center | Dr. Charles Saab | Endocrinologist | Approved |

## Ethics Review

| Ethics approval obtained | Approval date | Contact name | Contact email | Contact phone |
|---|---|---|---|---|
| Chronic Care Center | 11/12/2020 | Michelle Abi Saad | cccmas@chroniccare.org.lb | 009615455101 |

## Countries of Recruitment

| Name |
|---|
| Mexico |
| Russian Federation |
| United States of America |
| Netherlands |
| Portugal |
| Greece |
| Czech Republic |
| Lebanon |

## Health Conditions or Problems Studied

| Condition | Code | Keyword |
|---|---|---|
| type 2 diabetes | Obesity (E66) | T2D |

## Interventions

| Intervention | Description | Keyword |
|---|---|---|
| To confirm superiority of oral semaglutide at the maximum tolerated dose* (3 mg, 7 mg or 14 mg) | confirm the efficacy and safety of oral semaglutide in the paediatric population to address the unmet need for treatment of children and adolescents 10 to <18 years of age with type 2 diabetes. Further, the trial will explore the beta-cell function-preserving effects of oral semaglutide during treatment and after a period of 12 weeks offtrialproduct following the 52-week treatment period. | T2D |

## Primary Outcomes

| Name | Time Points | Measure |
|---|---|---|
| Change from baseline (week 0) to week 26 in glycosylated haemoglobin (HbA1c) (%-point and | week 0 to week 26 | HbA1c |

## Key Secondary Outcomes

| Name | Time Points | Measure |
|---|---|---|
| Fasting plasma glucose (FPG) (mmol/L) | week 0 to week 26 | FPG |
| Body mass index (BMI) standard deviation score (SDS) | week 0 to week 26 | BMI |

## Trial Results

**Summary results**

**Study results globally**

**Date of posting of results summaries**

**Date of first journal publication of results**

**Results URL link**

**Baseline characteristics**

**Participant flow**

**Adverse events**

**Outcome measures**

**URL to protocol files**