Clinical trial results:
A randomised, double-blind, placebo-controlled exploratory study to explore the efficacy and safety of PQ Grass 27600 SU in subjects with seasonal allergic rhinitis and/or rhinoconjunctivitis induced by grass pollen exposure

Summary

EudraCT number	2020-000408-13
Trial protocol	DE
Global end of trial date	28 October 2021

Results information

Result version number	v1 (current)
This version publication date	28 March 2024
First version publication date	28 March 2024

Trial information

Trial identification

Sponsor protocol code	PQGrass309

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT04687059
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Allergy Therapeutics
Sponsor organisation address	Dominion Way, West Sussex, BN14 8SA, Worthing, United Kingdom,
Public contact	Clinical Research Management, Bencard Allergie GmbH, pqgrass309@allergytherapeutics.com
Scientific contact	Clinical Research Management, Bencard Allergie GmbH, pqgrass309@allergytherapeutics.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?	No

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	28 October 2021
Is this the analysis of the primary completion data?	No

Global end of trial reached?	Yes
Global end of trial date	28 October 2021
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

To explore the efficacy of PQ Grass 27600 SU in grass pollen-induced seasonal allergic rhinitis and/or rhinoconjunctivitis in a field setting

Protection of trial subjects:

This study will be conducted by the investigator and the study centre in full conformance with the International Council for Harmonisation E6 guideline for GCP and the principles of the Declaration of Helsinki or the laws and regulations of the country in which the research is conducted, whichever affords the greater protection to the individual.
All subjects gave their written informed consent by personally dating and signing the ICF prior to admission to the clinical study and before any study protocol-specified procedures were carried out.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	19 October 2020
Long term follow-up planned	Yes
Long term follow-up rationale	Safety
Long term follow-up duration	1 Years
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Germany: 77
Country: Number of subjects enrolled	United States: 42
Worldwide total number of subjects	119
EEA total number of subjects	77

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)	119
From 65 to 84 years	0
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

The study was initiated on 19 October 2020 (first subject first visit [FSFV]) and the last subject last visit (LSLV).

Pre-assignment

Screening details:

196 screenings were performed, of these 193 subjects were screened as there were 3 re-screenings. Overall, 119 (100%) subjects (SAF/FAS) were randomised (77 subjects in Germany and 42 subjects in US).

Pre-assignment period milestones

Number of subjects started	119
Number of subjects completed	119

Period 1

Period 1 title	Screening
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator

Arms

Are arms mutually exclusive?	Yes
Arm title	PQ Grass Conventional Dosing Regimen

Arm description: -

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

Dosage and administration details:

Cumulative dose 27600 SU

Arm title	PQ Grass Extended Dosing Regimen

Arm description: -

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

Dosage and administration details:

Cumulative dose 27600 SU

Arm title	Placebo (containing MCT)

Arm description: -

Arm type	Placebo

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

Dosage and administration details:

Placebo contained MCT contains 2% (w/v) L-tyrosine and 0.5% (w/v) phenol and was indistinguishable from the active treatment.

Arm title	Placebo (without MCT)

Arm description: -

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

Dosage and administration details:

Placebo without MCT contained a buffered saline solution with 0.5% (w/v) phenol. The solution was colourless in appearance and was easily distinguishable from the active treatment and the placebo containing MCT.

Number of subjects in period 1	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)
Started	41	40	20
Completed	41	40	20

Number of subjects in period 1	Placebo (without MCT)
Started	18
Completed	18

Period 2

Period 2 title	Overall
Is this the baseline period?	No
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator

Arms

Are arms mutually exclusive?	Yes

Arm title	PQ Grass Conventional Dosing Regimen
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	PQ Grass
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Suspension for injection
Routes of administration	Subcutaneous use

Dosage and administration details:

Cumulative dose 27600 SU

Arm title	PQ Grass Extended Dosing Regimen
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	PQ Grass
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Suspension for injection
Routes of administration	Subcutaneous use

Dosage and administration details:

Cumulative dose 27600 SU

Arm title	Placebo (containing MCT)
Arm description: -	
Arm type	Placebo
Investigational medicinal product name	Placebo with MCT
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Suspension for injection
Routes of administration	Subcutaneous use

Dosage and administration details:

Placebo contained MCT contains 2% (w/v) L-tyrosine and 0.5% (w/v) phenol and was indistinguishable from the active treatment.

Arm title	Placebo (without MCT)
Arm description: -	
Arm type	Placebo
Investigational medicinal product name	Placebo with MCT
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Suspension for injection
Routes of administration	Subcutaneous use

Dosage and administration details:

Placebo without MCT contained a buffered saline solution with 0.5% (w/v) phenol. The solution was colourless in appearance and was easily distinguishable from the active treatment and the placebo containing MCT.

Number of subjects in period 2	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)
Started	41	40	20
Completed	41	40	20

Number of subjects in period 2	Placebo (without MCT)
Started	18
Completed	18

Baseline characteristics

Reporting groups	
Reporting group title	PQ Grass Conventional Dosing Regimen
Reporting group description: -	
Reporting group title	PQ Grass Extended Dosing Regimen
Reporting group description: -	
Reporting group title	Placebo (containing MCT)
Reporting group description: -	
Reporting group title	Placebo (without MCT)
Reporting group description: -	

Reporting group values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)
Number of subjects	41	40	20
Age categorical Units: Subjects			
Adults (18-64 years)	41	40	20
Age continuous Units: years			
arithmetic mean	34.5	32.3	34.3
standard deviation	± 11.45	± 10.23	± 10.69
Gender categorical Units: Subjects			
Female	28	21	9
Male	13	19	11
Ethinicity Units: Subjects			
Hispanic or Latino	1	1	0
Not Hispanic or Latino	40	39	20
Race Units: Subjects			
White	38	37	18
Black or African American	1	2	1
Asian	2	0	1
Other	0	1	0
Alcohol consumption and frequency Units: Subjects			
Never	10	13	3
Currently	30	26	16
Previously	1	1	1
Smoking consumption and frequency Units: Subjects			
Never	29	32	15
Currently	6	3	3
Previously	6	5	2

Height			
Units: centimetre			
arithmetic mean	170.86	173.25	174.20
standard deviation	± 10.365	± 9.072	± 7.161
Weight			
Units: kilogram(s)			
arithmetic mean	76.30	77.71	76.95
standard deviation	± 15.092	± 16.336	± 18.903
BMI			
Units: kilogram(s)/cubic metre			
arithmetic mean	26.11	25.81	25.15
standard deviation	± 4.625	± 4.696	± 4.7441

Reporting group values	Placebo (without MCT)	Total	
Number of subjects	18	119	
Age categorical			
Units: Subjects			
Adults (18-64 years)	18	119	
Age continuous			
Units: years			
arithmetic mean	31.5		
standard deviation	± 13.79	-	
Gender categorical			
Units: Subjects			
Female	10	68	
Male	8	51	
Ethinicity			
Units: Subjects			
Hispanic or Latino	2	4	
Not Hispanic or Latino	16	115	
Race			
Units: Subjects			
White	15	108	
Black or African American	1	5	
Asian	0	3	
Other	2	3	
Alcohol consumption and frequency			
Units: Subjects			
Never	7	33	
Currently	11	83	
Previously	0	3	
Smoking consumption and frequency			
Units: Subjects			
Never	17	93	
Currently	0	12	
Previously	1	14	
Height			
Units: centimetre			
arithmetic mean	171.59		
standard deviation	± 10.958	-	
Weight			

Units: kilogram(s)			
arithmetic mean	74.71		
standard deviation	± 11.815	-	
BMI			
Units: kilogram(s)/cubic metre			
arithmetic mean	25.38		
standard deviation	± 3.251	-	

End points

End points reporting groups

Reporting group title	PQ Grass Conventional Dosing Regimen
Reporting group description: -	
Reporting group title	PQ Grass Extended Dosing Regimen
Reporting group description: -	
Reporting group title	Placebo (containing MCT)
Reporting group description: -	
Reporting group title	Placebo (without MCT)
Reporting group description: -	
Reporting group title	PQ Grass Conventional Dosing Regimen
Reporting group description: -	
Reporting group title	PQ Grass Extended Dosing Regimen
Reporting group description: -	
Reporting group title	Placebo (containing MCT)
Reporting group description: -	
Reporting group title	Placebo (without MCT)
Reporting group description: -	
Subject analysis set title	FAS
Subject analysis set type	Full analysis
Subject analysis set description:	
All subjects who received at least 1 injection of the IMP. The analysis followed the intention-to-treat principle and analysed subjects according to the treatment group to which they were randomised.	
Subject analysis set title	SAF
Subject analysis set type	Safety analysis
Subject analysis set description:	
All subjects who received at least 1 injection of the IMP. Subjects were analysed according to the treatment that they actually received.	

Primary: CSMS Averaged Over the Peak GPS

End point title	CSMS Averaged Over the Peak GPS
End point description:	
6 individual symptoms assessed in a 4 point severity scale (0-No symptoms to 3-Severe symptoms.	
End point type	Primary
End point timeframe:	
Approximately 2-5 weeks	

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)	0.56 (± 0.263)	0.67 (± 0.264)	0 (± 0)	

Statistical analyses

Statistical analysis title	PQ Grass Conventional vs. Placebo containing MCT
Comparison groups	PQ Grass Conventional Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	61
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0325
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-33.1
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-48.8
upper limit	-17.4

Statistical analysis title	PQ Grass Extended vs Placebo containing MCT
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0112
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-39.5
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-54.7
upper limit	-24.4

Secondary: CSMS Averaged Over the Entire (or Truncated) GPS	
End point title	CSMS Averaged Over the Entire (or Truncated) GPS
End point description: 6 individual symptoms assessed in a 4 point severity scale (0-No symptoms to 3-Severe symptoms).	
End point type	Secondary
End point timeframe: Approximately 10 weeks	

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)	0.32 (± 0.25)	0.5 (± 0.215)	0 (± 0)	

Statistical analyses

Statistical analysis title	PQ Grass Conventional vs. Placebo containing MCT
Comparison groups	PQ Grass Conventional Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	61
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.1314
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-25.1
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-43.3
upper limit	-6.8

Statistical analysis title	PQ Grass Extended vs Placebo containing MCT
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0197
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-38.8
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-55.8
upper limit	-21.7

Secondary: TCS Averaged Over the Peak GPS	
End point title	TCS Averaged Over the Peak GPS
End point description:	
6 individual symptoms in a similar fashion to CSMS assessed in a 4 point severity scale (0-No symptoms to 3-Severe symptoms).	
End point type	Secondary
End point timeframe:	
Approximately 2-5 weeks	

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)	3.8 (± 1.748)	4.42 (± 1.759)	0 (± 0)	

Statistical analyses

Statistical analysis title	PQ Grass Conventional vs. Placebo containing MCT
Comparison groups	PQ Grass Conventional Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	61
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0298
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-35
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-51.2
upper limit	-18.9

Statistical analysis title	PQ Grass Extended vs Placebo containing MCT
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)

Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.012
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-40.8
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-56.4
upper limit	-25.1

Secondary: TCS Averaged Over Entire (or Truncated) GPS

End point title	TCS Averaged Over Entire (or Truncated) GPS
End point description:	
6 individual symptoms in a similar fashion to CSMS assessed in a 4 point severity scale (0-No symptoms to 3-Severe symptoms)	
End point type	Secondary
End point timeframe:	
Approximately 10 weeks	

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)	2.23 (± 1.416)	3.29 (± 1.418)	0 (± 0)	

Statistical analyses

Statistical analysis title	PQ Grass Conventional vs. Placebo containing MCT
Comparison groups	PQ Grass Conventional Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	61
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.1158
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-26.9

Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-45.6
upper limit	-8.2

Statistical analysis title	PQ Grass Extended vs Placebo containing MCT
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0202
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-39.9
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-57.5
upper limit	-22.2

Secondary: Daily Symptom Score (dSS) of the CSMS Averaged Over the Peak and Entire (or truncated) GPS

End point title	Daily Symptom Score (dSS) of the CSMS Averaged Over the Peak and Entire (or truncated) GPS

End point description:

Sum of the scores (0-No symptoms to 3-Severe symptoms) for the 6 individual symptoms assessed in CSMS divided by 6.

End point type	Secondary

End point timeframe:

Approximately 10 weeks. Duration of the Peak Grass pollen season (GPS) to be determined as per pollen counts within the GPS.

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)				
CSMS-dSS over the peak GPS	0.27 (± 0.150)	0.30 (± 0.151)	0 (± 0)	
CSMS-dSS during entire GPS	0.2 (± 0.128)	0.26 (± 0.129)	0 (± 0)	

Statistical analyses

Statistical analysis title	CSMS-dSS averaged over the peak GPS
Comparison groups	Placebo (containing MCT) v PQ Grass Conventional Dosing Regimen
Number of subjects included in analysis	61
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0474
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-29.2
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-44.7
upper limit	-13.7

Statistical analysis title	CSMS-dSS averaged over the entire GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0415
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-31.2
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-47.9
upper limit	-14.6

Secondary: Daily Medication Score (dMS) of the CSMS Averaged Over the Peak and Entire (or Truncated) GPS

End point title	Daily Medication Score (dMS) of the CSMS Averaged Over the Peak and Entire (or Truncated) GPS

End point description:

Score 0 (no relief medication) to 3 (highest step relief medication) per day; based on at least 1 dose of the medication of the highest step taken that day.

End point type	Secondary

End point timeframe:

Approximately 10 weeks. Duration of the peak GPS to be determined as per pollen counts within the GPS.

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)				
CSMS-dMS over peak GPS	0.29 (± 1.41)	0.37 (± 0.142)	0 (± 0)	
CSMS-dMS during entire GPS	0.13 (± 0.112)	0.24 (± 0.112)	0 (± 0)	

Statistical analyses

Statistical analysis title	CSMS-dMS averaged over the peak GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0089
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-55.3
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-74
upper limit	-36.7

Statistical analysis title	CSMS-dMS averaged over the entire (truncated) GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0316
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-53.5

Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-75.6
upper limit	-31.4

Secondary: dSS of the TCS Averaged Over the Peak GPS and Entire (or Truncated) GPS

End point title	dSS of the TCS Averaged Over the Peak GPS and Entire (or Truncated) GPS

End point description:

Sum of the scores (0-No symptoms to 3-Severe symptoms) for the 6 individual symptoms (i.e. ranging from 0 to 18).

End point type	Secondary

End point timeframe:

Approximately 10 weeks. Duration of the Peak Grass pollen season (GPS) to be determined as per pollen counts within the GPS.

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)				
TCS-dSS over the peak GPS	1.62 (± 0.903)	1.84 (± 0.908)	0 (± 0)	
TCS-dSS during the entire GPS	1.21 (± 0.774)	1.60 (± 0.777)	0 (± 0)	

Statistical analyses

Statistical analysis title	TCS-dSS averaged over the peak GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0426
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-29.6
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-44.9
upper limit	-14.3

Statistical analysis title	TCS-dSS averaged during the entire (truncated) GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0396
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-31.3
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-47.8
upper limit	-14.8

Secondary: dMS of the TCS Averaged Over the Peak GPS and Entire (or Truncated) GPS

End point title	dMS of the TCS Averaged Over the Peak GPS and Entire (or Truncated) GPS

End point description:

Score 0 (no relief medication) to 3 (highest step relief medication) per day; based on at least 1 dose of the medication of the highest step taken that day.

End point type	Secondary

End point timeframe:

Approximately 10 weeks. Duration of the Peak Grass pollen season (GPS) to be determined as per pollen counts within the GPS.

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard error)				
TCS-dMS over the peak GPS	2.18 (± 1.025)	2.58 (± 1.034)	0 (± 0)	
TCS-dMS during the entire GPS	1.02 (± 0.798)	1.70 (± 0.797)	0 (± 0)	

Statistical analyses

Statistical analysis title	TCS-dMS averaged over the peak GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0127
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-55.8
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-75.4
upper limit	-36.2

Statistical analysis title	TCS-dMS averaged over the entire (truncated) GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0326
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-54.2
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-77.3
upper limit	-31.1

Secondary: The Probability of Well Days and Severe Days During the Peak and Entire (or Truncated) GPS

End point title	The Probability of Well Days and Severe Days During the Peak and Entire (or Truncated) GPS

End point description:

A "well day" was defined based on CSMS as a day with:
• No use of relief medication on the particular day,
• And a total symptom score ≤2 out of 18 A "severe day" was based on CSMS and defined as a day with a symptom score of 3 in any of the 6 rhinitis/rhinoconjunctivitis symptoms.
The probability of a well day or a severe day was analyzed using data on a by-day level per subject using generalized estimating equation (GEE) or similar approaches as appropriate.
Well days and severe days were assessed during the peak GPS and entire (or truncated) GPS

End point type	Secondary

End point timeframe:

Approximately 10 weeks.

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	37	19	
Units: day				
arithmetic mean (standard deviation)				
Number of well days during peak GPS	4.73 (± 6.693)	6.46 (± 6.539)	0 (± 0)	
Number of severe days during peak GPS	2.07 (± 4.491)	1.03 (± 1.818)	0 (± 0)	
Number of well days during entire GPS	20.10 (± 18.195)	25.03 (± 17.716)	0 (± 0)	
Number of severe days during entire GPS	5.39 (± 12.870)	2.76 (± 4.044)	0 (± 0)	

Statistical analyses

Statistical analysis title	Number of well days during the peak GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	56
Analysis specification	Pre-specified
Analysis type	superiority
Parameter estimate	Odds ratio (OR)
Point estimate	1.86
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	0.958
upper limit	3.612

Statistical analysis title	Number of severe days during the peak GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	56
Analysis specification	Pre-specified
Analysis type	superiority
Parameter estimate	Odds ratio (OR)
Point estimate	0.31
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	0.158
upper limit	0.607

Secondary: Serum Ig Responses (Total IgE; Grass-specific IgE and IgG4; Specific IgE/Total IgE and Specific IgE/Specific IgG4) at Visit 12 and Visit 15

End point title	Serum Ig Responses (Total IgE; Grass-specific IgE and IgG4; Specific IgE/Total IgE and Specific IgE/Specific IgG4) at Visit 12 and Visit 15

End point description:

Immunological measurements (total IgE, grass-specific IgE and IgG4, specific IgE/total IgE and specific IgE/specific IgG4) and their changes between screening and post-treatment were analyzed descriptively. The change from baseline in immunoglobulin measurements was additionally analyzed using analysis of covariance (ANCOVA), including treatment groups and with baseline as covariate.

End point type	Secondary

End point timeframe:

Approximately 10 week

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	37	38	20	
Units: unit(s)				
arithmetic mean (standard deviation)				
Serum total IgE [kU/L] - Visit 12	13.31 (± 28.903)	3.14 (± 28.518)	-102.19 (± 39.327)	
Serum total IgE [kU/L] - Visit 15	40.86 (± 17.750)	27.53 (± 17.286)	-6.78 (± 24.155)	
Serum grass-specific IgE [kU/L] - Visit 12	9.24 (± 4.012)	9.24 (± 3.995)	-7.24 (± 4.860)	
Serum grass-specific IgE [kU/L] - Visit 15	18.66 (± 3.312)	17.96 (± 3.330)	11.36 (± 4.449)	
Serum grass-specific IgG4 [mg/L] - Visit 12	2.76 (± 0.673)	3.50 (± 0.670)	0.15 (± 0.871)	
Serum grass-specific IgG4 [mg/L] - Visit 15	1.93 (± 0.340)	2.04 (± 0.339)	0.33 (± 0.456)	
Grass-specific IgE / total IgE - Visit 12	0.04 (± 0.018)	0.04 (± 0.017)	0.01 (± 0.023)	
Grass-specific IgE / total IgE - Visit 15	0.10 (± 0.018)	0.09 (± 0.018)	0.09 (± 0.024)	
Grass-specific IgE / grass-specific IgG4 -Visit 12	-39.09 (± 7.658)	-39.17 (± 7.641)	-1.58 (± 10.107)	
Grass-specific IgE / grass-specific IgG4 -Visit 15	-22.72 (± 7.606)	-24.67 (± 7.602)	-7.19 (± 9.533)	

Statistical analyses

Statistical analysis title	Change from baseline to Visit 12 of serum IgG4
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)

Number of subjects included in analysis	58
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0006
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	3.34
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	2.12
upper limit	4.56

Statistical analysis title	Change from baseline to Visit 15 of IgG4
Comparison groups	Placebo (containing MCT) v PQ Grass Conventional Dosing Regimen
Number of subjects included in analysis	57
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0033
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	1.71
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	0.98
upper limit	2.45

Secondary: RQLQ(S) During the Peak GPS

End point title	RQLQ(S) During the Peak GPS
End point description:	

End point type	Secondary
End point timeframe:	
Approximately 10 weeks	

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	28	30	13	
Units: points				
least squares mean (standard error)				

RQLQ during peak GPS	0.44 (± 0.316)	0.72 (± 0.314)	0 (± 0)	

Statistical analyses

Statistical analysis title	Extended vs. Placebo with MCT during peak GPS
Comparison groups	Placebo (containing MCT) v PQ Grass Extended Dosing Regimen
Number of subjects included in analysis	43
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0243
Method	Mixed models analysis
Parameter estimate	Median difference (final values)
Point estimate	-37.9
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-54.9
upper limit	-21.8

Statistical analysis title	Conventional vs Placebo with MCT during peak GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	43
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.1706
Method	Mixed models analysis
Parameter estimate	Median difference (final values)
Point estimate	-22.9
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-41.1
upper limit	-4.7

Secondary: aTCS Average During GPS	
End point title	aTCS Average During GPS
End point description:	

End point type	Secondary
End point timeframe:	
Approximately 2-5 weeks	

End point values	PQ Grass Conventional Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo (containing MCT)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	41	40	20	
Units: Points				
least squares mean (standard deviation)				
aTCS during peak GPS	3.98 (± 1.839)	4.63 (± 1.849)	0 (± 0)	
aTCS during entire GPS	2.36 (± 1.493)	3.47 (± 1.496)	0 (± 0)	

Statistical analyses

Statistical analysis title	aTCS average during peak GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.0124
Method	Mixed models analysis
Parameter estimate	Median difference (final values)
Point estimate	-40.1
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-55.6
upper limit	-24.5

Statistical analysis title	aTCS average during entire GPS
Comparison groups	PQ Grass Extended Dosing Regimen v Placebo (containing MCT)
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.023
Method	Mixed models analysis
Parameter estimate	Median difference (final values)
Point estimate	-39.3
Confidence interval	
level	Other: 80 %
sides	2-sided
lower limit	-56.8
upper limit	-21.8

Adverse events

Adverse events information	
Timeframe for reporting adverse events: 375 days (study duration including safety follow-up)	
Assessment type	Systematic

Dictionary used	
Dictionary name	MedDRA
Dictionary version	24.0

Reporting groups	
Reporting group title	PQ Grass Standard Dosing Regimen
Reporting group description: -	
Reporting group title	PQ Grass Extended Dosing Regimen
Reporting group description: -	
Reporting group title	Placebo with MCT
Reporting group description: -	
Reporting group title	Placebo without MCT
Reporting group description: -	

Serious adverse events	PQ Grass Standard Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo with MCT
Total subjects affected by serious adverse events			
subjects affected / exposed	1 / 40 (2.50%)	0 / 40 (0.00%)	1 / 21 (4.76%)
number of deaths (all causes)	0	0	0
number of deaths resulting from adverse events	0	0	0
Pregnancy, puerperium and perinatal conditions			
Abortion spontaneous			
subjects affected / exposed	1 / 40 (2.50%)	0 / 40 (0.00%)	0 / 21 (0.00%)
occurrences causally related to treatment / all	0 / 1	0 / 0	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Infections and infestations			
Appendicitis			
subjects affected / exposed	0 / 40 (0.00%)	0 / 40 (0.00%)	1 / 21 (4.76%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0

Serious adverse events	Placebo without MCT		
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 18 (0.00%)		
number of deaths (all causes)	0		
number of deaths resulting from	0		

adverse events			
Pregnancy, puerperium and perinatal conditions			
Abortion spontaneous			
subjects affected / exposed	0 / 18 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Infections and infestations			
Appendicitis			
subjects affected / exposed	0 / 18 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		

Frequency threshold for reporting non-serious adverse events: 5 %

Non-serious adverse events	PQ Grass Standard Dosing Regimen	PQ Grass Extended Dosing Regimen	Placebo with MCT
Total subjects affected by non-serious adverse events			
subjects affected / exposed	39 / 40 (97.50%)	38 / 40 (95.00%)	21 / 21 (100.00%)
Nervous system disorders			
Headache			
subjects affected / exposed	1 / 40 (2.50%)	3 / 40 (7.50%)	2 / 21 (9.52%)
occurrences (all)	1	3	5
General disorders and administration site conditions			
Injection site bruising			
subjects affected / exposed	0 / 40 (0.00%)	0 / 40 (0.00%)	3 / 21 (14.29%)
occurrences (all)	0	0	3
Injection site erythema			
subjects affected / exposed	31 / 40 (77.50%)	35 / 40 (87.50%)	2 / 21 (9.52%)
occurrences (all)	109	126	3
Injection site pain			
subjects affected / exposed	21 / 40 (52.50%)	19 / 40 (47.50%)	8 / 21 (38.10%)
occurrences (all)	48	48	18
Injection site pruritus			
subjects affected / exposed	23 / 40 (57.50%)	29 / 40 (72.50%)	2 / 21 (9.52%)
occurrences (all)	82	93	3
Injection site swelling			

subjects affected / exposed	28 / 40 (70.00%)	30 / 40 (75.00%)	3 / 21 (14.29%)
occurrences (all)	78	102	4
Injection site urticaria			
subjects affected / exposed	10 / 40 (25.00%)	9 / 40 (22.50%)	1 / 21 (4.76%)
occurrences (all)	32	29	1
Injection site warmth			
subjects affected / exposed	3 / 40 (7.50%)	5 / 40 (12.50%)	0 / 21 (0.00%)
occurrences (all)	3	6	0
Eye disorders			
Eye pruritus			
subjects affected / exposed	1 / 40 (2.50%)	3 / 40 (7.50%)	3 / 21 (14.29%)
occurrences (all)	1	4	5
Lacrimation increased			
subjects affected / exposed	0 / 40 (0.00%)	4 / 40 (10.00%)	0 / 21 (0.00%)
occurrences (all)	0	4	0
Respiratory, thoracic and mediastinal disorders			
Nasal congestion			
subjects affected / exposed	0 / 40 (0.00%)	1 / 40 (2.50%)	4 / 21 (19.05%)
occurrences (all)	0	1	8
Sneezing			
subjects affected / exposed	1 / 40 (2.50%)	4 / 40 (10.00%)	1 / 21 (4.76%)
occurrences (all)	2	5	2
Infections and infestations			
COVID-19			
subjects affected / exposed	2 / 40 (5.00%)	1 / 40 (2.50%)	2 / 21 (9.52%)
occurrences (all)	2	1	2
Nasopharyngitis			
subjects affected / exposed	4 / 40 (10.00%)	3 / 40 (7.50%)	1 / 21 (4.76%)
occurrences (all)	4	3	1

Non-serious adverse events	Placebo without MCT		
Total subjects affected by non-serious adverse events			
subjects affected / exposed	18 / 18 (100.00%)		
Nervous system disorders			
Headache			
subjects affected / exposed	2 / 18 (11.11%)		
occurrences (all)	2		

General disorders and administration site conditions			
Injection site bruising			
subjects affected / exposed	0 / 18 (0.00%)		
occurrences (all)	0		
Injection site erythema			
subjects affected / exposed	4 / 18 (22.22%)		
occurrences (all)	6		
Injection site pain			
subjects affected / exposed	2 / 18 (11.11%)		
occurrences (all)	9		
Injection site pruritus			
subjects affected / exposed	2 / 18 (11.11%)		
occurrences (all)	3		
Injection site swelling			
subjects affected / exposed	1 / 18 (5.56%)		
occurrences (all)	1		
Injection site urticaria			
subjects affected / exposed	1 / 18 (5.56%)		
occurrences (all)	1		
Injection site warmth			
subjects affected / exposed	0 / 18 (0.00%)		
occurrences (all)	0		
Eye disorders			
Eye pruritus			
subjects affected / exposed	1 / 18 (5.56%)		
occurrences (all)	2		
Lacrimation increased			
subjects affected / exposed	0 / 18 (0.00%)		
occurrences (all)	0		
Respiratory, thoracic and mediastinal disorders			
Nasal congestion			
subjects affected / exposed	1 / 18 (5.56%)		
occurrences (all)	2		
Sneezing			
subjects affected / exposed	2 / 18 (11.11%)		
occurrences (all)	2		

Infections and infestations COVID-19 subjects affected / exposed occurrences (all) Nasopharyngitis subjects affected / exposed occurrences (all)	 3 / 18 (16.67%) 3 0 / 18 (0.00%) 0		

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