Clinical trial results:
A Multicenter, Randomized, Double-Blind, Placebo-Controlled Phase 3 Trial to Evaluate Efficacy and Safety of Lenabasum in Dermatomyositis

Summary

EudraCT number	2018-003273-10
Trial protocol	GB DE HU CZ BG SE ES IT
Global end of trial date	05 October 2021

Results information

Result version number	v1 (current)
This version publication date	30 July 2022
First version publication date	30 July 2022

Trial information

Trial identification

Sponsor protocol code	JBT101-DM-002

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT03813160
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Corbus Pharmaceuticals, Inc.
Sponsor organisation address	500 River Ridge Drive, Second Floor, Norwood, Massachusetts, United States, 02062
Public contact	Brian Walsh, Corbus Pharmaceuticals, Inc., brian.walsh@corbuspharma.com
Scientific contact	Rachael Brake, Corbus Pharmaceuticals, Inc., rachael.brakeBrian.Walsh@corbuspharma.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	18 March 2022
Is this the analysis of the primary completion data?	Yes
Primary completion date	05 October 2021
Global end of trial reached?	Yes
Global end of trial date	05 October 2021
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

To evaluate the efficacy of lenabasum compared to placebo in subjects with dermatomyositis (DM) as measured by Total Improvement Score (TIS).
To evaluate the safety and tolerability of lenabasum in subjects with DM.
To evaluate the pharmacokinetics (PK) of lenabasum and investigate its metabolites in subjects with DM.
To evaluate the effect of lenabasum compared to placebo on blood biomarkers of inflammation in subjects with DM.
To evaluate the effect of lenabasum compared to placebo in skin biopsies in involved skin in subjects with DM (optional at selected sites).
To evaluate the effect of lenabasum compared to placebo in involved skin as evaluated by skin photography in subjects with DM (optional at selected sites).
To evaluate the long-term efficacy and safety of lenabasum in subjects who completed the study treatment phase and continued to receive treatment in an optional open-label extension (OLE).

Protection of trial subjects:

Oversight of subject safety was provided by an independent unblinded Data Monitoring Committee (DMC), which advised the Sponsor and the investigators. The independent DMC reviewed the accumulated safety and operational data about every 6 months through the last subject/last visit or more frequently, if necessary. The DMC reviewed interim/cumulative data for evidence of study-related AEs and factors external to the study such as scientific or therapeutic developments that could impact subject safety. The DMC also reviewed progress of the study and efficacy outcomes. The DMC made recommendations to the Sponsor about any of the items it reviewed.

Background therapy:

Subjects were allowed to continue their standard-of-care treatment (stable dose of immunosuppressive medication) while participating in the study, in order to reduce the risk of disease flare precipitated by having to discontinue medication to meet entry criteria. To avoid confounding efficacy and safety evaluations, changes in ongoing treatments and introduction of new therapies were kept to a minimum.

Evidence for comparator:

Placebo was a powder-in-capsule containing microcrystalline cellulose and magnesium stearate (no active ingredient).

Actual start date of recruitment	30 December 2018
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	Poland: 7
Country: Number of subjects enrolled	Spain: 8

Country: Number of subjects enrolled	Sweden: 2
Country: Number of subjects enrolled	United Kingdom: 3
Country: Number of subjects enrolled	Bulgaria: 7
Country: Number of subjects enrolled	Czechia: 6
Country: Number of subjects enrolled	Germany: 4
Country: Number of subjects enrolled	Hungary: 7
Country: Number of subjects enrolled	Italy: 7
Country: Number of subjects enrolled	Canada: 1
Country: Number of subjects enrolled	Japan: 26
Country: Number of subjects enrolled	Korea, Republic of: 8
Country: Number of subjects enrolled	United States: 92
Worldwide total number of subjects	178
EEA total number of subjects	48

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)	153
From 65 to 84 years	25
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

A total of 178 subjects were randomized to receive lenabasum 5 mg BID, lenabasum 20 mg BID or placebo at multiple study sites in the United States, Bulgaria, Canada, Czech Republic, Germany, Hungary, Italy, Japan, Poland, Republic of Korea, Spain, Sweden, and United Kingdom. Subjects were randomized between 17 Dec 2018 and 26 Apr 2021.

Pre-assignment

Screening details:

Of the 178 randomized subjects, 23 subjects were screen failures. The most common reasons for screen failure were failure to satisfy inclusion/exclusion criteria (15) and other (8). Three (1.7%) subjects discontinued prior to dosing, and 175 (98.3%) subjects were included in the modified intent-to-treat (mITT) population.

Period 1

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

Blinding implementation details:

Lenabasum and placebo capsules had a similar physical appearance and were packaged, labeled, and handled so that subjects and study staff were not able to distinguish between the two. Identical assessments and procedures were followed during the study for subjects assigned to lenabasum or placebo.

Arms

Are arms mutually exclusive?	Yes
Arm title	Lenabasum 20 mg

Arm description:

Lenabasum 20mg was given orally, twice daily as a hard capsule.

Arm type	Experimental
Investigational medicinal product name	Lenabasum 20mg BID
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Capsule, hard
Routes of administration	Oral use

Dosage and administration details:

Lenabasum 20mg was given twice daily as a hard capsule for 52 weeks.

Arm title	Lenabasum 5mg

Arm description:

Lenabasum 5mg was given orally, twice daily as a hard capsule.

Arm type	Experimental
Investigational medicinal product name	Lenabasum 5mg BID
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Capsule, hard
Routes of administration	Oral use

Dosage and administration details:

Lenabasum 5mg was given twice daily as a hard capsule for 52 weeks.

Arm title	Placebo

Arm description:

Placebo was given as a powder-in-capsule containing microcrystalline cellulose and magnesium stearate.

Arm type	Placebo
Investigational medicinal product name	Placebo
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Capsule, hard
Routes of administration	Oral use

Dosage and administration details:

Placebo was given as a hard capsule twice daily for 52 weeks.

Number of subjects in period 1	Lenabasum 20 mg	Lenabasum 5mg	Placebo
Started	71	35	72
Completed	35	22	38
Not completed	36	13	34
Physician decision	1	-	-
Consent withdrawn by subject	6	1	1
unknown	1	-	-
Study terminated by Sponsor	-	-	25
Adverse event, non-fatal	2	1	4
Not specified	-	-	1
Non-compliance with the study	-	-	1
Lost to follow-up	-	1	1
Study terminated by Sponsor.	26	-	-
Study terminated by the Sponsor	-	10	-
Lack of efficacy	-	-	1

Period 2

Period 2 title	Part B
Is this the baseline period?	No
Allocation method	Not applicable
Blinding used	Not blinded

Arms

Arm title	Lenabasum 20mg

Arm description:

Lenabasum 20mg given orally, twice daily as a hard capsule.

Arm type	Active comparator

Investigational medicinal product name	Lenabasum 20mg BID
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Capsule, hard
Routes of administration	Oral use

Dosage and administration details:

Lenabasum 20mg BID was given orally as a hard-gelatin capsule in the open-label extension period (Part B).

Number of subjects in period 2[1]	Lenabasum 20mg
Started	49
Completed	9
Not completed	40
Sponsor terminated the study	27
Adverse event, non-fatal	1
Not specified	1
Lost to follow-up	1
Missing	10

Notes:

[1] - The number of subjects starting the period is not consistent with the number completing the preceding period. It is expected the number of subjects starting the subsequent period will be the same as the number completing the preceding period.
Justification: Out of 95 subjects who completed Part A of the study, 81 subjects entered the open-label extension phase of the study (Part B).

Baseline characteristics

Reporting groups	
Reporting group title	Lenabasum 20 mg
Reporting group description:	
Lenabasum 20mg was given orally, twice daily as a hard capsule.	
Reporting group title	Lenabasum 5mg
Reporting group description:	
Lenabasum 5mg was given orally, twice daily as a hard capsule.	
Reporting group title	Placebo
Reporting group description:	
Placebo was given as a powder-in-capsule containing microcrystalline cellulose and magnesium stearate.	

Reporting group values	Lenabasum 20 mg	Lenabasum 5mg	Placebo
Number of subjects	71	35	72
Age categorical			
< 65 Years			
Units: Subjects			
In utero	0	0	0
Preterm newborn infants (gestational age < 37 wks)	0	0	0
Newborns (0-27 days)	0	0	0
Infants and toddlers (28 days-23 months)	0	0	0
Children (2-11 years)	0	0	0
Adolescents (12-17 years)	0	0	0
Adults (18-64 years)	59	30	63
From 65-84 years	12	5	9
85 years and over	0	0	0
Age continuous			
Units: years			
arithmetic mean	52.7	51.5	51.5
standard deviation	± 12.76	± 11.34	± 12.19
Gender categorical			
Female			
Male			
Units: Subjects			
Female	56	30	59
Male	15	5	13
Race			
Units: Subjects			
American Indian or Alaska Native	0	0	3
Asian	15	7	13
Black or African American	3	0	0
White	53	26	56
Other	0	2	0

Reporting group values	Total		
Number of subjects	178		

Age categorical			
< 65 Years			
Units: Subjects			
In utero	0		
Preterm newborn infants (gestational age < 37 wks)	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)	152		
From 65-84 years	26		
85 years and over	0		
Age continuous			
Units: years			
arithmetic mean			
standard deviation	-		
Gender categorical			
Female Male			
Units: Subjects			
Female	145		
Male	33		
Race			
Units: Subjects			
American Indian or Alaska Native	3		
Asian	35		
Black or African American	3		
White	135		
Other	2		

End points

End points reporting groups

Reporting group title	Lenabasum 20 mg
Reporting group description:	
Lenabasum 20mg was given orally, twice daily as a hard capsule.	
Reporting group title	Lenabasum 5mg
Reporting group description:	
Lenabasum 5mg was given orally, twice daily as a hard capsule.	
Reporting group title	Placebo
Reporting group description:	
Placebo was given as a powder-in-capsule containing microcrystalline cellulose and magnesium stearate.	
Reporting group title	Lenabasum 20mg
Reporting group description:	
Lenabasum 20mg given orally, twice daily as a hard capsule.	

Primary: Total Improvement Score

End point title	Total Improvement Score
End point description:	
Modified Intent-to-Treat Population	
End point type	Primary
End point timeframe:	
Total Improvement Score (TIS) for lenabasum 20 mg BID compared to placebo at Week 28.	

End point values	Lenabasum 20 mg	Lenabasum 5mg	Placebo	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	69	28	71	
Units: LS Mean (SE)				
least squares mean (standard error)	26.8 (± 2.85)	22.7 (± 3.81)	23.7 (± 2.79)	

Statistical analyses

Statistical analysis title	Lenabasum 20 mg BID versus placebo
Statistical analysis description:	
The analysis of the primary endpoint was performed using an mixed model for repeated measures (MMRM) using data after missing data or visits due to COVID-19 using LOCF. The primary efficacy endpoint analysis compared TIS (by the 2016 ACR/EULAR Myositis Response Criteria) of lenabasum 20 mg to placebo at Week 28.	
Comparison groups	Lenabasum 20 mg v Placebo

Number of subjects included in analysis	140
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.3311 [1]
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	3.2
Confidence interval	
level	95 %
sides	2-sided
lower limit	-3.3
upper limit	9.6

Notes:

[1] - Based on MMRM with region, Sex, Baseline MMT-8 score, Baseline immunosuppressive use, visit, treatment and Baseline immunosuppressive use by-visit and treatment-by-visit interaction as fixed effects. Covariance structure type = un.

Statistical analysis title	Lenabasum 5mg BID versus Placebo

Statistical analysis description:

Secondary analyses compared lenabasum 5 mg BID and all lenabasum vs. placebo at Week 28.

Comparison groups	Lenabasum 5mg v Placebo
Number of subjects included in analysis	99
Analysis specification	Pre-specified
Analysis type	superiority[2]
P-value	= 0.8161
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-0.9
Confidence interval	
level	95 %
sides	2-sided
lower limit	-8.9
upper limit	7

Notes:

[2] - Based on MMRM with region, Sex, Baseline MMT-8 score, Baseline immunosuppressive use, visit, treatment and Baseline immunosuppressive use by-visit and treatment-by-visit interaction as fixed effects. Covariance structure type = un.

Adverse events

Adverse events information

Timeframe for reporting adverse events:

Assessment of Treatment emergent adverse events from Day 1 through Week 52.

Adverse event reporting additional description:

Part A: The Safety Follow-up Visit was to occur 4±1 weeks after the last visit (Visit 10/ET) and was to be completed by subjects who did not rollover into Part B.
Part B: The Safety Follow-up Visit was to occur 4 ± 1 weeks after the last visit (Visit B8 or Visit C8 if OLE was extended).

Assessment type	Systematic

Dictionary used

Dictionary name	MedDRA
Dictionary version	23.1

Reporting groups

Reporting group title	Lenabasum 20 mg BID, Part A

Reporting group description:

Adverse events in Part A.

Reporting group title	Lenabasum 5 mg BID, Part A

Reporting group description:

Adverse events in Part A.

Reporting group title	Placebo, Part A

Reporting group description:

Adverse events in Part A.

Reporting group title	Lenabasum 20 mg BID, Part B

Reporting group description:

Adverse events in Part B.

Serious adverse events	Lenabasum 20 mg BID, Part A	Lenabasum 5 mg BID, Part A	Placebo, Part A
Total subjects affected by serious adverse events			
subjects affected / exposed	8 / 69 (11.59%)	3 / 35 (8.57%)	3 / 71 (4.23%)
number of deaths (all causes)	0	0	0
number of deaths resulting from adverse events	0	0	0
Neoplasms benign, malignant and unspecified (incl cysts and polyps)			
Epstein-Barr virus associated lymphoma			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	1 / 1	0 / 0	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Malignant melanoma			

subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	1 / 71 (1.41%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Papillary thyroid cancer			
subjects affected / exposed	0 / 69 (0.00%)	1 / 35 (2.86%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	0 / 0	0 / 1	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Injury, poisoning and procedural complications			
Gastrointestinal procedural complication			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (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
Vascular disorders			
Aortic thrombosis			
subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	1 / 71 (1.41%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Deep vein thrombosis			
subjects affected / exposed	0 / 69 (0.00%)	1 / 35 (2.86%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	0 / 0	0 / 1	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Cardiac disorders			
Atrial fibrillation			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (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
Accelerated idioventricular rhythm			
subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	1 / 71 (1.41%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Coronary artery dissection			

subjects affected / exposed	0 / 69 (0.00%)	1 / 35 (2.86%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	0 / 0	0 / 1	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Nervous system disorders			
Vertebral artery dissection			
subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	1 / 71 (1.41%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Headache			
subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	1 / 71 (1.41%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
General disorders and administration site conditions			
Influenza like illness			
subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	1 / 71 (1.41%)
occurrences causally related to treatment / all	0 / 0	0 / 0	1 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Ear and labyrinth disorders			
Tinnitus			
subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	1 / 71 (1.41%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 1
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Respiratory, thoracic and mediastinal disorders			
Pneumonia aspiration			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (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
Skin and subcutaneous tissue disorders			
Dermatomyositis			
subjects affected / exposed	1 / 69 (1.45%)	1 / 35 (2.86%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	1 / 1	1 / 1	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Musculoskeletal and connective tissue disorders			

Spinal stenosis			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	1 / 1	0 / 0	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Infections and infestations			
Appendicitis perforated			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (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
Gastroenteritis viral			
subjects affected / exposed	0 / 69 (0.00%)	1 / 35 (2.86%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	0 / 0	0 / 1	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Pneumonia respiratory syncytial viral			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (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
COVID-19			
subjects affected / exposed	0 / 69 (0.00%)	0 / 35 (0.00%)	0 / 71 (0.00%)
occurrences causally related to treatment / all	0 / 0	0 / 0	0 / 0
deaths causally related to treatment / all	0 / 0	0 / 0	0 / 0
Cellulitis			
subjects affected / exposed	1 / 69 (1.45%)	0 / 35 (0.00%)	0 / 71 (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

Serious adverse events	Lenabasum 20 mg BID, Part B		
Total subjects affected by serious adverse events			
subjects affected / exposed	3 / 49 (6.12%)		
number of deaths (all causes)	0		
number of deaths resulting from adverse events	0		
Neoplasms benign, malignant and unspecified (incl cysts and polyps)			
Epstein-Barr virus associated lymphoma			

subjects affected / exposed	0 / 49 (0.00%)			
occurrences causally related to treatment / all	0 / 0			
deaths causally related to treatment / all	0 / 0			
Malignant melanoma				
subjects affected / exposed	0 / 49 (0.00%)			
occurrences causally related to treatment / all	0 / 0			
deaths causally related to treatment / all	0 / 0			
Papillary thyroid cancer				
subjects affected / exposed	0 / 49 (0.00%)			
occurrences causally related to treatment / all	0 / 0			
deaths causally related to treatment / all	0 / 0			
Injury, poisoning and procedural complications				
Gastrointestinal procedural complication				
subjects affected / exposed	0 / 49 (0.00%)			
occurrences causally related to treatment / all	0 / 0			
deaths causally related to treatment / all	0 / 0			
Vascular disorders				
Aortic thrombosis				
subjects affected / exposed	0 / 49 (0.00%)			
occurrences causally related to treatment / all	0 / 0			
deaths causally related to treatment / all	0 / 0			
Deep vein thrombosis				
subjects affected / exposed	0 / 49 (0.00%)			
occurrences causally related to treatment / all	0 / 0			
deaths causally related to treatment / all	0 / 0			
Cardiac disorders				
Atrial fibrillation				
subjects affected / exposed	0 / 49 (0.00%)			
occurrences causally related to treatment / all	0 / 0			
deaths causally related to treatment / all	0 / 0			
Accelerated idioventricular rhythm				

subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Coronary artery dissection			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Nervous system disorders			
Vertebral artery dissection			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Headache			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
General disorders and administration site conditions			
Influenza like illness			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Ear and labyrinth disorders			
Tinnitus			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Respiratory, thoracic and mediastinal disorders			
Pneumonia aspiration			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Skin and subcutaneous tissue disorders			
Dermatomyositis			

subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Musculoskeletal and connective tissue disorders			
Spinal stenosis			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Infections and infestations			
Appendicitis perforated			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Gastroenteritis viral			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
Pneumonia respiratory syncytial viral			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences causally related to treatment / all	0 / 0		
deaths causally related to treatment / all	0 / 0		
COVID-19			
subjects affected / exposed	2 / 49 (4.08%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
Cellulitis			
subjects affected / exposed	0 / 49 (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	Lenabasum 20 mg BID, Part A	Lenabasum 5 mg BID, Part A	Placebo, Part A
Total subjects affected by non-serious adverse events			
subjects affected / exposed	60 / 69 (86.96%)	30 / 35 (85.71%)	62 / 71 (87.32%)
Investigations			
Blood pressure increased			
subjects affected / exposed	0 / 69 (0.00%)	2 / 35 (5.71%)	1 / 71 (1.41%)
occurrences (all)	0	2	1
Nervous system disorders			
Dizziness			
subjects affected / exposed	9 / 69 (13.04%)	2 / 35 (5.71%)	3 / 71 (4.23%)
occurrences (all)	10	2	3
Headache			
subjects affected / exposed	7 / 69 (10.14%)	5 / 35 (14.29%)	10 / 71 (14.08%)
occurrences (all)	8	6	10
Somnolence			
subjects affected / exposed	2 / 69 (2.90%)	2 / 35 (5.71%)	0 / 71 (0.00%)
occurrences (all)	2	2	0
General disorders and administration site conditions			
Fatigue			
subjects affected / exposed	6 / 69 (8.70%)	1 / 35 (2.86%)	2 / 71 (2.82%)
occurrences (all)	6	1	2
Adverse drug reaction			
subjects affected / exposed	2 / 69 (2.90%)	2 / 35 (5.71%)	3 / 71 (4.23%)
occurrences (all)	2	2	4
Chills			
subjects affected / exposed	0 / 69 (0.00%)	2 / 35 (5.71%)	0 / 71 (0.00%)
occurrences (all)	0	2	0
Oedema peripheral			
subjects affected / exposed	2 / 69 (2.90%)	2 / 35 (5.71%)	1 / 71 (1.41%)
occurrences (all)	3	2	1
Gastrointestinal disorders			
Diarrhoea			
subjects affected / exposed	10 / 69 (14.49%)	4 / 35 (11.43%)	6 / 71 (8.45%)
occurrences (all)	12	7	7
Dry mouth			

subjects affected / exposed	5 / 69 (7.25%)	2 / 35 (5.71%)	2 / 71 (2.82%)
occurrences (all)	5	2	2
Nausea			
subjects affected / exposed	8 / 69 (11.59%)	4 / 35 (11.43%)	3 / 71 (4.23%)
occurrences (all)	10	5	3
Abdominal pain upper			
subjects affected / exposed	1 / 69 (1.45%)	3 / 35 (8.57%)	0 / 71 (0.00%)
occurrences (all)	1	3	0
Constipation			
subjects affected / exposed	1 / 69 (1.45%)	2 / 35 (5.71%)	1 / 71 (1.41%)
occurrences (all)	1	2	1
Skin and subcutaneous tissue disorders			
Rash			
subjects affected / exposed	0 / 69 (0.00%)	2 / 35 (5.71%)	0 / 71 (0.00%)
occurrences (all)	0	2	0
Dermatomyositis			
subjects affected / exposed	19 / 69 (27.54%)	11 / 35 (31.43%)	29 / 71 (40.85%)
occurrences (all)	27	17	45
Psychiatric disorders			
Insomnia			
subjects affected / exposed	0 / 69 (0.00%)	2 / 35 (5.71%)	4 / 71 (5.63%)
occurrences (all)	0	2	4
Endocrine disorders			
Hypothyroidism			
subjects affected / exposed	0 / 69 (0.00%)	2 / 35 (5.71%)	0 / 71 (0.00%)
occurrences (all)	0	2	0
Musculoskeletal and connective tissue disorders			
Arthralgia			
subjects affected / exposed	7 / 69 (10.14%)	0 / 35 (0.00%)	2 / 71 (2.82%)
occurrences (all)	8	0	4
Back pain			
subjects affected / exposed	2 / 69 (2.90%)	0 / 35 (0.00%)	4 / 71 (5.63%)
occurrences (all)	2	0	4
Pain in extremity			
subjects affected / exposed	2 / 69 (2.90%)	2 / 35 (5.71%)	4 / 71 (5.63%)
occurrences (all)	3	2	4

Neck pain			
subjects affected / exposed	1 / 69 (1.45%)	2 / 35 (5.71%)	0 / 71 (0.00%)
occurrences (all)	1	2	0
Infections and infestations			
Bronchitis			
subjects affected / exposed	4 / 69 (5.80%)	1 / 35 (2.86%)	3 / 71 (4.23%)
occurrences (all)	4	1	5
Nasopharyngitis			
subjects affected / exposed	5 / 69 (7.25%)	3 / 35 (8.57%)	2 / 71 (2.82%)
occurrences (all)	5	3	2
Urinary tract infection			
subjects affected / exposed	4 / 69 (5.80%)	2 / 35 (5.71%)	3 / 71 (4.23%)
occurrences (all)	5	2	4
Metabolism and nutrition disorders			
Decreased appetite			
subjects affected / exposed	4 / 69 (5.80%)	0 / 35 (0.00%)	0 / 71 (0.00%)
occurrences (all)	4	0	0

Non-serious adverse events	Lenabasum 20 mg BID, Part B		
Total subjects affected by non-serious adverse events			
subjects affected / exposed	37 / 49 (75.51%)		
Investigations			
Blood pressure increased			
subjects affected / exposed	0 / 49 (0.00%)		
occurrences (all)	0		
Nervous system disorders			
Dizziness			
subjects affected / exposed	2 / 49 (4.08%)		
occurrences (all)	2		
Headache			
subjects affected / exposed	10 / 49 (20.41%)		
occurrences (all)	10		
Somnolence			
subjects affected / exposed	3 / 49 (6.12%)		
occurrences (all)	3		
General disorders and administration site conditions			

Fatigue subjects affected / exposed occurrences (all)	2 / 49 (4.08%) 2		
Adverse drug reaction subjects affected / exposed occurrences (all)	2 / 49 (4.08%) 2		
Chills subjects affected / exposed occurrences (all)	0 / 49 (0.00%) 0		
Oedema peripheral subjects affected / exposed occurrences (all)	0 / 49 (0.00%) 0		
Gastrointestinal disorders Diarrhoea subjects affected / exposed occurrences (all)	7 / 49 (14.29%) 8		
Dry mouth subjects affected / exposed occurrences (all)	3 / 49 (6.12%) 3		
Nausea subjects affected / exposed occurrences (all)	2 / 49 (4.08%) 2		
Abdominal pain upper subjects affected / exposed occurrences (all)	0 / 49 (0.00%) 0		
Constipation subjects affected / exposed occurrences (all)	0 / 49 (0.00%) 0		
Skin and subcutaneous tissue disorders Rash subjects affected / exposed occurrences (all)	4 / 49 (8.16%) 4		
Dermatomyositis subjects affected / exposed occurrences (all)	35 / 49 (71.43%) 42		
Psychiatric disorders			

Insomnia subjects affected / exposed occurrences (all)	1 / 49 (2.04%) 1		
Endocrine disorders Hypothyroidism subjects affected / exposed occurrences (all)	1 / 49 (2.04%) 1		
Musculoskeletal and connective tissue disorders Arthralgia subjects affected / exposed occurrences (all) Back pain subjects affected / exposed occurrences (all) Pain in extremity subjects affected / exposed occurrences (all) Neck pain subjects affected / exposed occurrences (all)	 7 / 49 (14.29%) 9 3 / 49 (6.12%) 3 4 / 49 (8.16%) 5 1 / 49 (2.04%) 1		
Infections and infestations Bronchitis subjects affected / exposed occurrences (all) Nasopharyngitis subjects affected / exposed occurrences (all) Urinary tract infection subjects affected / exposed occurrences (all)	 1 / 49 (2.04%) 1 2 / 49 (4.08%) 2 1 / 49 (2.04%) 2		
Metabolism and nutrition disorders Decreased appetite subjects affected / exposed occurrences (all)	 1 / 49 (2.04%) 1		

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
03 October 2018	Version 1.1
17 October 2018	Version 1.2
05 December 2019	Version 2.0: Secondary efficacy endpoint was revised to include each component of the TIS (MDGA, PtGA, HAQ, muscle enzymes, and EMGA) at the request of Regulatory Authorities. Evaluation of long-term efficacy and safety as an additional objective in an optional open-label extension (OLE) was added. Subjects received lenabasum 20 mg BID. A schedule of assessments was provided for one year with the potential for the OLE to be extended beyond 1 year. Due to a continued favorable safety profile and efficacy signals for lenabasum, an optional OLE was added for further evaluation of long-term safety and efficacy. Added key inclusion criteria including DM diagnosis by Bohan and Peter or ACR/EULAR criteria at the request of Regulatory Authorities. No major changes were made to eligibility criteria other than providing additional clarity to address questions from sites/ IRB/EC/Regulatory Authorities.
13 January 2021	Version 2.2

Notes:

Interruptions (globally)

Were there any global interruptions to the trial? Yes

Date	Interruption	Restart date
26 April 2021	Sponsor made the decision to terminate the double-blind study once all subjects had completed at least Visit 6 allowing for analysis of the amended primary endpoint. Sponsor made the decision to discontinue development of lenabasum for DM.	-

Notes:

Limitations and caveats

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

None reported.

Notes: