Clinical trial results:
A 28-week, randomized, double-blind, active-controlled, multicenter study to evaluate the efficacy of subcutaneously administered secukinumab compared to ustekinumab in adult patients with psoriatic arthritis and failure of TNF-inhibitor treatment (AgAIN)

Summary

EudraCT number	2022-001516-26
Trial protocol	DE
Global end of trial date	18 December 2024

Results information

Result version number	v1
This version publication date	23 November 2025
First version publication date	23 November 2025

Trial information

Trial identification

Sponsor protocol code	CAIN457FDE05

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT05569174
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Novartis Pharma AG
Sponsor organisation address	Novartis Campus, Basel, Switzerland,
Public contact	Clinical Disclosure Office, Novartis Pharma AG, 41 613241111, novartis.email@novartis.com
Scientific contact	Clinical Disclosure Office, Novartis Pharma AG, 41 613241111, novartis.email@novartis.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 December 2024
Is this the analysis of the primary completion data?	No

Global end of trial reached?	Yes
Global end of trial date	18 December 2024
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

The main objective was to demonstrate the superiority of 12 weeks of treatment with secukinumab 300 mg (subcutaneous) compared to placebo (both arms in combination with patient individualized conventional therapy), in participants with moderate to severe rotator cuff tendinopathy, based on change in Western Ontario Rotator Cuff index (WORC) score from Baseline to Week 24.

Protection of trial subjects:

The study was in compliance with the ethical principles derived from the Declaration of Helsinki and the International Conference on Harmonization (ICH) Good Clinical Practice (GCP) guidelines. All the local regulatory requirements pertinent to safety of trial subjects were also followed during the conduct of the trial.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	02 December 2022
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Germany: 62
Worldwide total number of subjects	62
EEA total number of subjects	62

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)	61
From 65 to 84 years	1

85 years and over	0

Subject disposition

Recruitment

Recruitment details:

Patients were randomized in 19 study sites across Germany

Pre-assignment

Screening details:

A total of 100 participants were screened and 62 participants were randomized in nearly equal numbers to the 2 treatment groups (secukinumab: N=30; placebo: N=32) and received study treatment

Period 1

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

Arms

Are arms mutually exclusive?	Yes
Arm title	Secukinumab

Arm description:

Participants received 300 mg of secukinumab s.c. for 12 weeks

Arm type	Experimental
Investigational medicinal product name	Secukinumab
Investigational medicinal product code	AIN457
Other name	
Pharmaceutical forms	Solution for injection in pre-filled syringe, Solution for infusion in pre-filled syringe
Routes of administration	Subcutaneous use

Dosage and administration details:

Secukinumab 300 mg subcutaneosly for 12 weeks in a pre-filled syringe (PFS)

Arm title	Placebo

Arm description:

Participants received placebo s.c. for 12 weeks

Arm type	Placebo
Investigational medicinal product name	Placebo
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Solution for injection in pre-filled syringe
Routes of administration	Subcutaneous use

Dosage and administration details:

Placebo to match secukinumab s.c. for 12 weeks in a PFS

Number of subjects in period 1	Secukinumab	Placebo
Started	30	32
Completed	30	27
Not completed	0	5
Adverse event, non-fatal	-	1
Participant wish	-	1
Withdrawal of consent	-	1
Lack of compliance	-	1
Lost to follow-up	-	1

Baseline characteristics

Reporting groups	
Reporting group title	Secukinumab
Reporting group description:	
Participants received 300 mg of secukinumab s.c. for 12 weeks	
Reporting group title	Placebo
Reporting group description:	
Participants received placebo s.c. for 12 weeks	

Reporting group values	Secukinumab	Placebo	Total
Number of subjects	30	32	62
Age categorical 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)	29	32	61
From 65-84 years	1	0	1
85 years and over	0	0	0
Age Continuous Units: years			
arithmetic mean	52.3	52.1	
standard deviation	± 7.5	± 9.0	-
Sex: Female, Male Units: Participants			
Female	20	15	35
Male	10	17	27
Race/Ethnicity, Customized Units: Subjects			
Caucasian	29	31	60
Black	1	0	1
Asian	0	1	1

End points

End points reporting groups

Reporting group title	Secukinumab
Reporting group description:	
Participants received 300 mg of secukinumab s.c. for 12 weeks	
Reporting group title	Placebo
Reporting group description:	
Participants received placebo s.c. for 12 weeks	

Primary: Change from baseline in the Western Ontario Rotator Cuff (WORC) Patient Reported Outcome (PRO) Percentage Score at Week 24

End point title	Change from baseline in the Western Ontario Rotator Cuff (WORC) Patient Reported Outcome (PRO) Percentage Score at Week 24[1]

End point description:

The WORC Index consisted of 21 items divided into 5 Domains: Physical Symptoms (6 items), Sport/Recreation (4 items), Work Function (4 items), Lifestyle Function (4 items) and Emotional Function (3 items). Each of the 21 items in the WORC was rated using a visual analogue scale (VAS) ranging from 0 (no impact on quality of life) to 100 (worst possible impact). Thus, the total score ranged from 0 to 2100 points. The score was reported as a percentage of normal by subtracting the total score from 2100, dividing by 2100, and multiplying by 100. Total final WORC percentage scores ranged from 0%, the lowest functional status level, to 100%, the highest functional status level.

Change from baseline in the WORC percentage total score was assessed at Week 24. A positive change from baseline indicated an improvement.

End point type	Primary

End point timeframe:

Baseline, Week 24

Notes:

[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: No statistical analyses are disclosed for this primary end point

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	28	28		
Units: Score on a Scale				
arithmetic mean (standard deviation)	55.7 (± 28.1)	46.8 (± 26.9)		

Statistical analyses

No statistical analyses for this end point

Secondary: Change from baseline in the WORC percentage sub-scores at Week 24

End point title	Change from baseline in the WORC percentage sub-scores at Week 24

End point description:

The WORC Index consisted of 21 items divided into 5 Domains: Physical Symptoms (6 items), Sport/Recreation (4 items), Work Function (4 items), Lifestyle Function (4 items) and Emotional

Function (3 items). Each of the 21 items in the WORC was rated using a VAS ranging from 0 (no impact on quality of life) to 100 (worst possible impact).
Each subdomain score was calculated as a percentage of normal function, ranging from 0% (worst condition) to 100% (best condition).

Change from baseline in the WORC Index percentage sub-domain score was assessed at Week 24. A positive change from baseline indicated an improvement

End point type	Secondary
End point timeframe:	
Baseline, Week 24	

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	28	28		
Units: Score on a Scale				
arithmetic mean (standard deviation)				
Physical symptom score	48.8 (± 31.2)	40.0 (± 25.0)		
Sports and recreation	51.8 (± 30.9)	44.0 (± 30.6)		
Work	59.7 (± 32.0)	49.9 (± 30.5)		
Lifestyle	59.5 (± 27.3)	52.9 (± 26.4)		
Emotional function	64.2 (± 23.6)	54.3 (± 31.5)		

Statistical analyses

No statistical analyses for this end point

Secondary: Change from baseline in Participant's Global Assessment of Disease Activity Score at Week 24

End point title	Change from baseline in Participant's Global Assessment of Disease Activity Score at Week 24

End point description:

The participant’s global assessment of disease activity was performed using 100 mm VAS ranging from 0=“no activity” to 100= “most active”, after the question " Please indicate with a vertical mark (|) through the horizontal line the global activity of your disease in the last 24 hours”.
Change from baseline in the participant's global assessment of disease activity score was assessed at Week 24. A negative change from baseline indicated improvement

End point type	Secondary
End point timeframe:	
Baseline, Week 24	

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	26	25		
Units: Score on a scale				
arithmetic mean (standard deviation)	-46.4 (± 36.6)	-18.5 (± 37.2)		

Statistical analyses

No statistical analyses for this end point

Secondary: Change from baseline in Short Form 36 (SF-36v2) Score at Week 24

End point title	Change from baseline in Short Form 36 (SF-36v2) Score at Week 24

End point description:

The SF-36 Health Survey was a validated questionnaire assessing health-related quality of life. Participants completed the survey throughout the study, reflecting their health status over the previous 4 weeks. It consisted of eight subscales that were scored individually; and two overall summary scores, the Physical Component Summary (PCS) and the Mental Component Summary (MCS). Component summary scores (PCS and MCS) were derived from weighted combinations of the eight subscales. Each domain and component summary score ranged from 0 to 100, with higher scores indicating better quality of life.
Change from baseline to Week 24 in all subscale and summary scores was assessed, where a positive change indicated improvement.

End point type	Secondary

End point timeframe:

Baseline, Week 24

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	26	25		
Units: Score on a Scale				
arithmetic mean (standard deviation)				
Physical component summary	9.4 (± 9.1)	9.7 (± 7.9)		
Mental component summary	8.0 (± 10.7)	6.3 (± 11.9)		
General health	3.0 (± 8.5)	3.9 (± 10.6)		
Vitality	8.3 (± 9.9)	7.7 (± 11.0)		
Social functioning	8.3 (± 10.1)	8.2 (± 10.9)		
Role emotional	11.5 (± 13.1)	5.8 (± 14.5)		
Mental health	7.6 (± 10.0)	9.1 (± 10.9)		
Physical function	8.8 (± 9.5)	8.6 (± 6.4)		
Role-physical	9.9 (± 10.3)	9.3 (± 10.9)		
Bodily pain	16.2 (± 10.2)	15.1 (± 9.2)		

Statistical analyses

No statistical analyses for this end point

Secondary: Change from baseline in Quick Disability of the Arm, Shoulder and Hand

(DASH) questionnaire Score at Week 24

End point title	Change from baseline in Quick Disability of the Arm, Shoulder and Hand (DASH) questionnaire Score at Week 24

End point description:

The QuickDASH was an abbreviated form of the DASH. The QuickDASH Index was self-administered and used 11 items to measure physical function and symptoms in participants with any or multiple musculoskeletal disorders of the upper limb. It had a recall period of 1 week. Each item of the QuickDASH had five response options. The total score was reported on a 100-point scale, with 100 indicating the most disability.
Change from baseline to Week 24 was assessed. A negative change from baseline indicated improvement.

End point type	Secondary

End point timeframe:

Baseline, Week 24

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	26	25		
Units: Score on a Scale				
arithmetic mean (standard deviation)	-34.1 (± 23.7)	-33.5 (± 24.6)		

Statistical analyses

No statistical analyses for this end point

Secondary: Change from baseline in the Numeric Rating Scale (NRS) pain score at Week 24

End point title	Change from baseline in the Numeric Rating Scale (NRS) pain score at Week 24

End point description:

The score for pain was assessed by using an 11-point NRS ranging from 0 "no pain at all" to 10 "worst possible pain", after the question "On a numeric scale of 0–10 where would you rate your pain at this time".
Change from baseline to Wek 24 was assessed. A negative change from baseline indicated improvement

End point type	Secondary

End point timeframe:

Baseline, Week 24

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	26	25		
Units: Score on a Scale				
arithmetic mean (standard deviation)	-4.5 (± 2.8)	-4.6 (± 2.4)		

Statistical analyses

No statistical analyses for this end point

Secondary: Change from baseline in EuroQol 5 Dimensions- 5 Levels (EQ-5D-5L) at Week 24- Total Score

End point title	Change from baseline in EuroQol 5 Dimensions- 5 Levels (EQ-5D-5L) at Week 24- Total Score

End point description:

The EQ-5D-5L was a standardized instrument used to evaluate patients' overall health-related quality of life (QoL). It consisted of two components: the descriptive system and the EQ visual analogue scale (EQ VAS).
The descriptive system assessed five dimensions of health: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension was rated on five levels, from 1 (no problems) to 5 (extreme problems). These ratings were combined to generate a composite health index, which could be converted into a single summary health utility score using published value sets. Total scores ranged from 0 to 1, with lower scores indicating greater health impairment.

Changes in total scores from baseline to Week 24 were analyzed, with positive changes indicating improvement in health-related quality of life.

End point type	Secondary

End point timeframe:

Baseline, Week 24

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	26	25		
Units: Score on a Scale				
arithmetic mean (standard deviation)	0.265 (± 0.226)	0.342 (± 0.228)		

Statistical analyses

No statistical analyses for this end point

Secondary: Change from baseline in EuroQol 5 Dimensions- 5 Levels (EQ-5D-5L) at Week 24- EQ VAS

End point title	Change from baseline in EuroQol 5 Dimensions- 5 Levels (EQ-5D-5L) at Week 24- EQ VAS

End point description:

The EQ-5D-5L was a standardized instrument used to evaluate patients' overall health-related quality of life (QoL). It consisted of two components: the descriptive system and the EQ visual analogue scale (EQ VAS).
The EQ VAS captured the respondent's self-rated health on a vertical scale ranging from 0 (worst imaginable health) to 100 (best imaginable health).

Changes in EQ VAS scores from baseline to Week 24 were analyzed, with positive changes indicating improvement in health-related quality of life.

End point type	Secondary

End point timeframe:

Baseline, Week 24

End point values	Secukinumab	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	26	25		
Units: Score on a Scale				
arithmetic mean (standard deviation)	18.3 (± 36.5)	23.8 (± 27.3)		

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information	
Timeframe for reporting adverse events:	
From start of treatment to end of study, assessed up to approximately 24 weeks	
Adverse event reporting additional description:	
The safety analysis were done on the safety population, which included all randomized subjects who received at least one dose of study medication.	
Assessment type	Systematic

Dictionary used	
Dictionary name	MedDRA
Dictionary version	27.1

Reporting groups	
Reporting group title	Secukinumab
Reporting group description:	
Secukinumab 300 mg s.c for 12 weeks in a PFS	
Reporting group title	Placebo
Reporting group description:	
Placebo to match secukinumab s.c. for 12 weeks in a PFS	

Serious adverse events	Secukinumab	Placebo	
Total subjects affected by serious adverse events			
subjects affected / exposed	2 / 30 (6.67%)	3 / 32 (9.38%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	
Investigations			
Lipase increased			
subjects affected / exposed	0 / 30 (0.00%)	1 / 32 (3.13%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Neoplasms benign, malignant and unspecified (incl cysts and polyps)			
Pancreatic neuroendocrine tumour			
subjects affected / exposed	0 / 30 (0.00%)	1 / 32 (3.13%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Injury, poisoning and procedural complications			
Vaginal cuff dehiscence			

subjects affected / exposed	0 / 30 (0.00%)	1 / 32 (3.13%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Vascular disorders			
Paradoxical embolism			
subjects affected / exposed	0 / 30 (0.00%)	1 / 32 (3.13%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Nervous system disorders			
Occipital lobe stroke			
subjects affected / exposed	0 / 30 (0.00%)	1 / 32 (3.13%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Psychiatric disorders			
Depression			
subjects affected / exposed	1 / 30 (3.33%)	0 / 32 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Infections and infestations			
Oropharyngeal candidiasis			
subjects affected / exposed	1 / 30 (3.33%)	0 / 32 (0.00%)	
occurrences causally related to treatment / all	1 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	

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

Non-serious adverse events	Secukinumab	Placebo	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	22 / 30 (73.33%)	24 / 32 (75.00%)	
Injury, poisoning and procedural complications			
Ligament sprain			
subjects affected / exposed	2 / 30 (6.67%)	0 / 32 (0.00%)	
occurrences (all)	2	0	
Vascular disorders			

Hypertension			
subjects affected / exposed	3 / 30 (10.00%)	2 / 32 (6.25%)	
occurrences (all)	3	3	
Nervous system disorders			
Headache			
subjects affected / exposed	8 / 30 (26.67%)	6 / 32 (18.75%)	
occurrences (all)	18	18	
General disorders and administration site conditions			
Fatigue			
subjects affected / exposed	0 / 30 (0.00%)	2 / 32 (6.25%)	
occurrences (all)	0	2	
Gastrointestinal disorders			
Diarrhoea			
subjects affected / exposed	1 / 30 (3.33%)	2 / 32 (6.25%)	
occurrences (all)	1	2	
Psychiatric disorders			
Depression			
subjects affected / exposed	2 / 30 (6.67%)	0 / 32 (0.00%)	
occurrences (all)	2	0	
Musculoskeletal and connective tissue disorders			
Arthralgia			
subjects affected / exposed	3 / 30 (10.00%)	11 / 32 (34.38%)	
occurrences (all)	4	17	
Back pain			
subjects affected / exposed	4 / 30 (13.33%)	3 / 32 (9.38%)	
occurrences (all)	7	5	
Neck pain			
subjects affected / exposed	1 / 30 (3.33%)	2 / 32 (6.25%)	
occurrences (all)	1	2	
Infections and infestations			
Bronchitis			
subjects affected / exposed	0 / 30 (0.00%)	3 / 32 (9.38%)	
occurrences (all)	0	5	
COVID-19			
subjects affected / exposed	4 / 30 (13.33%)	3 / 32 (9.38%)	
occurrences (all)	4	3	
Gastrointestinal infection			

subjects affected / exposed	2 / 30 (6.67%)	0 / 32 (0.00%)	
occurrences (all)	2	0	
Nasopharyngitis			
subjects affected / exposed	5 / 30 (16.67%)	7 / 32 (21.88%)	
occurrences (all)	5	8	
Oral herpes			
subjects affected / exposed	2 / 30 (6.67%)	2 / 32 (6.25%)	
occurrences (all)	2	2	
Respiratory tract infection			
subjects affected / exposed	2 / 30 (6.67%)	0 / 32 (0.00%)	
occurrences (all)	2	0	
Sinusitis			
subjects affected / exposed	0 / 30 (0.00%)	2 / 32 (6.25%)	
occurrences (all)	0	2	
Metabolism and nutrition disorders			
Hypercholesterolaemia			
subjects affected / exposed	2 / 30 (6.67%)	1 / 32 (3.13%)	
occurrences (all)	2	1	

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
12 June 2023	- Update of inclusion criteria describing the severity of the symptoms - Omission of ECG assessments - Inclusion of high sensitivity CRP as laboratory parameter in clinical chemistry - Addition of optional WORC PRO at screening - Clarification on X-Ray assessment - Update on study length justification - Clarification of Run-in phase definition
10 July 2024	- Clarification that painful arc test needs to be "positive" for inclusion - Clarification regarding non-NSAID medication as additional study treatment - Removal that discontinuation is required in case of 2 missed doses - Clarification that paper-based PROs can be used as backup - Clarification that adverse events are monitored depending on last dose of study treatment - Inclusion of Hy's law language for SAEs - Addition of the section "Reporting of study treatment errors, study treatment misuse/abuse and overdose". - Update of primary endpoint analysis to reflect that analysis was to be only descriptive due to early termination of screening.

Notes:

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

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

Due to the limited sample size, the results are not statistically significant, and no conclusions regarding efficacy or lack thereof can be drawn.

Notes: