NOVARTIS

Clinical Trial Results Website

Sponsor

Novartis Pharmaceuticals

Generic Drug Name

Secukinumab

Trial Indication(s)

moderate to severe plaque psoriasis

Protocol Number

CAIN457A2323

Protocol Title

A multicenter, randomized, double-blind, placebo-controlled, 52-weeks study to demonstrate the efficacy, safety and tolerability of subcutaneous secukinumab injections with 2 mL pre-filled syringes (300 mg) in adult subjects with moderate to severe plaque psoriasis

Clinical Trial Phase

Phase 3

Phase of Drug Development

Phase IIIb

Study Start/End Dates

Study Start Date: December 2016 (Actual)
Primary Completion Date: August 2017 (Actual)
Study Completion Date: June 2018 (Actual)

Reason for Termination (If applicable)

Study Design/Methodology

This was a 52-week multicenter, randomized, double-blind, placebo-controlled, parallel-group trial planned to enroll approximately 210 patients with moderate to severe plaque-type psoriasis.

The study consisted of 4 periods: Screening (of at least 1 week and up to 4 weeks), Treatment Period 1 (of 12 weeks), Treatment Period 2 (of 40 weeks) and Follow-up (of 8weeks).

The Treatment Period 1 was defined as Randomization through Visit Week 12 (prior to Week 12 dose). At the start of the Treatment Period 1, eligible patients were randomized at a 1:1:1 ratio to one of three
treatment groups:

- Secukinumab 300 mg regimen group (2 mL PFS)
- Secukinumab 300 mg regimen group (2 × 1 mL PFS)
- Placebo group

The Treatment Period 2 was defined as Week 12 through Week 52. Prior to receiving the Week 12 dose, all patients from the placebo group who were PASI 90 non-responders were re-randomized at a ratio 1:1 to either secukinumab 300 mg 2 mL PFS OR secukinumab 300 mg 2 × 1 mL PFS group and received secukinumab at Weeks 12, 13, 14, and 15, thereafter every four weeks starting at Week 16 and up to Week 48.

Only patients who prematurely discontinue the treatment in Treatment Period 1 or 2 for any reason were to enter the treatment-free Follow-up Period to complete Visits F4 and F8.

Any treatment known to worsen psoriasis (e.g. beta-blockers, calcium channel blockers, lithium) was required to be stable at least 4 weeks before randomization.

After Screening, the use of concomitant medication for psoriasis in all body regions was restricted to bland emollients (not supplied by Novartis) and other non-medicated interventions. A mild to moderate potency topical corticosteroid (TCS) were allowed for the

treatment of the face, scalp, and anogenitalb area during the Screening. These TCS were required to be stopped at least the day before the Randomization Visit.

Exposure to ultraviolet (UV) light (including sunbathing and/or use of UV tanning devices) was limited to avoid possible effect on psoriasis.

Centers

54 centers in 11 countries: Germany(5), Belgium(2), Latvia(8), United States(15), Iceland(1), Spain(8), United Kingdom(4), Canada(2), Russia(5), Poland(2), Turkey(2)

Objectives:

Primary objective

The primary objective was to demonstrate the efficacy of secukinumab 300 mg when administered as 2 mL pre-filled syringes (PFSs) in patients with plaque-type psoriasis with respect to both PASI 75 and IGA mod 2011 0 or 1 response (co-primary endpoint) at Week 12, compared to placebo.
The key secondary objectives were:

Key secondary objectives

To demonstrate the efficacy of secukinumab 300 mg when administered as 2 mL PFS in patients with plaque-type psoriasis with respect to PASI 90 and PASI 100 at Week 12, compared to placebo.

To demonstrate the efficacy of secukinumab 300 mg when administered as two 1 mL PFS in patients with plaque-type psoriasis with respect to PASI 100 at Week 12, compared to placebo.

The other secondary objectives were:

To assess the efficacy of secukinumab 300 mg 2 mL PFS on moderate to severe plaque-type psoriasis with respect to PASI score, IGA mod 2011 score, PASI 50 / 75 / 90 / 100 and IGA mod 2011 0 or 1 response up to Week 12 compared to placebo, and over time up to
Week 52.

To investigate the clinical safety and tolerability of secukinumab 300 mg 2 mL PFS as assessed by vital signs, clinical laboratory variables, and adverse events (AEs) monitoring, compared to placebo.

To assess the patient usability (ability to follow instructions for use and potential use-related hazards) and satisfaction with the secukinumab 2 mL PFS utilizing a self-administered

Self-Injection Assessment Questionnaire (SIAQ) and investigator/site staff observation of secukinumab 300 mg 2 mL PFS administration.

To assess the effects of secukinumab 300 mg 2 mL PFS with respect to Dermatology Life Quality Index (DLQI) 0 or 1 achievement and DLQI changes at Week 12 compared to placebo, and over time up to Week 52.

Test Product (s), Dose(s), and Mode(s) of Administration

Secukinumab 300 mg 2 mL Pre-filled syringe; and Secukinumab 300 mg 1 mL Pre-filled syringe

Statistical Methods

Statistical analyses of efficacy variables were performed on the FAS, involving all patients who entered into the treatment period. Safety analyses were performed on the safety set, including all patients who took at least one dose of study treatment during the treatment period.

The co-primary endpoints were PASI 75 response at Week 12 and IGA mod 2011 0 or 1 response at Week 12. The key secondary endpoints of this study planned were PASI 90 response and PASI 100 response at Week 12.

The primary analysis method for PASI 75 and IGA mod 2011 0 or 1 response at Week 12 was evaluated using logistic regression model with treatment group, baseline bodyweight and baseline PASI score as explanatory variables. Odds ratios were computed for comparisons of secukinumab dose regimen versus placebo utilizing the logistic regression model fitted. In case of the logistic regression did not converge due to low response rates in the placebo group, an exact logistic regression was performed.

In case of response rates of 0% or 100% in one of the treatment groups, for analyses with multiple imputation, confidence intervals for risk difference and p-values from the t-test for the risk difference comparing to 0 were provided; for analyses with non-responder imputation, Fisher's exact test was performed and confidence intervals for risk difference were provided.

Response variables based on PASI score and IGA mod 2011 categories were imputed with multiple imputations method as primary imputation method. Within this analysis the PASI score or IGA mod 2011 categories were imputed and response variables were derived based on the imputed scores by each treatment arm.

(Modified) Non-responder imputation was used as sensitivity method: Missing values with respect to response variables based on PASI score and IGA mod 2011 categories were imputed with non-response regardless to the reason for missing data. Summary tables for PASI scores and IGA mod 2011 categories were imputed using multiple imputation. Only PASI and IGA mod 2011 based response variables were imputed with multiple imputation or non-response, other response variables (e.g. DLQI 0 or 1 achievement) were imputed with LOCF.

The secondary efficacy variables involved in the above testing strategy were analyzed analogously to the primary endpoints. i.e., logistic regression model with treatment group, baseline bodyweight, and baseline PASI score as explanatory variables. Odds ratios were computed for comparisons of secukinumab regimen versus placebo utilizing the logistic regression model fitted.

Summary statistics for PASI 50, PASI 75, PASI 90, PASI 100 and IGA mod 2011 0 or 1 response by visit were presented in contingency tables and included absolute and relative frequencies. For DLQI and HAQ-DI, missing values were replaced by LOCF. Baseline values were not carried forward.

Summaries were based on the FAS and were presented separately for each treatment group.

Relapse was defined as when the achieved maximal PASI improvement from baseline was reduced by > 50%. Patients experiencing relapse events were summarized by treatment groups after stopping of study treatments.

Patients experiencing rebound and rebound like event were summarized by treatment groups for patients who discontinued from the study since completers (i.e., patients who completed study treatment) did not enter treatment free follow-up period. Listing was provided for patients experiencing any rebound like event.

Study Population: Key Inclusion/Exclusion Criteria

Inclusion Criteria

Subjects eligible for inclusion in this study had to fulfill all of the following criteria:

1. Subjects must be able to understand and communicate with the investigator and comply with the requirements of the study and must give a written, signed and dated informed consent before any study related activity is performed. Where relevant, a legal representative will also sign the informed study consent according to local laws and regulations.

2. Men or women of at least 18 years of age at the time of Screening.

3. Chronic plaque-type psoriasis present for at least 6 months and diagnosed before Randomization.

4. Moderate to severe psoriasis as defined at Randomization by:
   - PASI score of 12 or greater, and
   - IGA mod 2011 score of 3 or greater (based on a scale of 0 – 4), and
   - Body Surface Area (BSA) affected by plaque-type psoriasis of 10% or greater.

5. Candidate for systemic therapy. This is defined as a subject having moderate to severe chronic plaque-type psoriasis that is inadequately controlled by
   - Topical treatment and/or
   - Phototherapy and/or
   - Previous systemic therapy

Exclusion Criteria

1. Forms of psoriasis other than chronic plaque-type (e.g., pustular, erythrodermic and guttate psoriasis) at Screening or Randomization.

2. Ongoing use of prohibited treatments. Washout periods detailed in the protocol have to be adhered to. Subjects not willing to limit UV light exposure (e.g., sunbathing and/or the use of tanning devices) during the course of the study will be considered not eligible for this study since UV light exposure is prohibited.
   Note: administration of live vaccines 6 weeks prior to Randomization or during the study period is also prohibited.

3. Previous exposure to secukinumab (AIN457) or any other biologic drug directly targeting IL-17 or the IL-17 receptor.

4. Use of other investigational drugs at the time of enrollment, or within 5 half-lives of enrollment, or within 30 days until the expected pharmacodynamic effect has returned to baseline, whichever is longer; or longer if required by local regulations.

5. Pregnant or nursing (lactating) women, where pregnancy is defined as the state of a female after conception and until the termination of gestation, confirmed by a positive hCG laboratory test.

6. History of lymphoproliferative disease or any known malignancy or history of malignancy of any organ system treated or untreated within the past 5 years, regardless of whether there is evidence of local recurrence or metastases (except for Bowen's disease, or basal cell carcinoma or actinic keratoses that have been treated with no evidence of recurrence in the past 12 weeks; carcinoma in situ of the cervix or non-invasive malignant colon polyps that have been removed).

7. History of hypersensitivity to any of study drug constituent

Participant Flow Table

Treatment Period 1

	Secukinumab 2 mL PFS	Secukinumab 2 x 1 mL PFS	Placebo	Total
Arm/Group Description	Secukinumab 300 mg in one 2 mL pre-filled syringe	Secukinumab 300 mg in pre-filled 1 mL syringes (current approved form)	Placebo	
Started	72	71	71	214
Completed	72	69	69	209
Not Completed	0	2	2	5
Adverse Event	0	1	0	1
Lack of Efficacy	0	0	1	1
Withdrawal by Subject	0	1	2	3

Treatment Period 2

	Secukinumab 2 mL PFS	Secukinumab 2 x 1 mL PFS	Placebo	Secukinumab 2 mL PFS following placebo	Secukinumab 2 x 1 mL PFS following placebo	Total
Arm/Group Description	Secukinumab 300 mg in 2 mL pre-filled syringe	Secukinumab in 1mL pre-filled syringes (current approved form)	Placebo	Switched from placebo to secukinumab 300 mg, in 2 mL pre-filled syringe	Switched from placebo to secukinumab 300 mg in pre-filled 1 mL syringes	
Started	72	69	0	34	34	209
Completed	67	66	NA	32	33	198
Not Completed	5	3	NA	2	1	11
Lost to Follow-up	2	0	NA	2	0	4

Adverse Event	3	2	NA	0	0	5
Lack of Efficacy	0	1	NA	0	0	1
Pregnancy	0	0	NA	0	1	1

Baseline Characteristics

	Secukinumab 2 mL PFS	Secukinumab 2 x 1 mL PFS	Placebo	Total
Arm/Group Description	Secukinumab 300 mg in one 2 mL pre-filled syringe	Secukinumab 300 mg in pre-filled 1 mL syringes (current approved form)	Placebo	
Units: Number of Participants	72	71	71	214
Sex units: Count of Participants				
Female	28	28	25	81
Male	44	43	46	133
Race units: Count of Participants				
Caucasian	64	66	64	194
Black	2	1	1	4
Asian	4	4	4	12
Pacific Islander	0	0	1	1
Other	2	0	1	3

Age, Customized
(units: participants)
Count of Participants (Not Applicable)

>65 years	68	64	68	200
>=65 years	4	7	3	14
>=75 years	0	0	0	0

Summary of Efficacy

Primary Outcome Results

Participants with Psoriasis Area and Severity Index (PASI) 75 response after 12 weeks of treatment
(Time Frame: 12 weeks)

Response criterion	Treatment comparison test vs. control	test n*/m (%)	control n*/m (%)	Odds ratio estimate (95% CI)	Two-sided p-value	One-sided p-value
PASI 75	AIN457 300 mg (2mL PFS) vs. Placebo	64/72(88.9)	1/71(1.7)	717.42(68.00,7569.56)	<.0001	<.0001
	AIN457 300 mg (2x1mL PFS) vs. Placebo	58/71(81.7)	1/71(1.7)	419.33(40.87,4302.75)	<.0001	<.0001

Response criterion	Treatment comparison test vs. control	test n*/m (%)	control n*/m (%)	Odds ratio estimate (95% CI)	Two-sided p-value	One-sided p-value
IGA 0/1	AIN457 300 mg (2mL PFS) vs. Placebo	55/72(76.4)	1/71(1.4)	400.58(47.48,3379.99)	<.0001	<.0001
	AIN457 300 mg (2x1mL PFS) vs. Placebo	49/71(69.0)	1/71(1.4)	282.27(33.82,2355.97)	<.0001	<.0001

Secondary Outcome Results

Participants with PASI 90 after 12 weeks of treatment

(Time Frame: 12 weeks)

Response criterion	Treatment comparison test vs. control	test n*/m (%)	control n*/m (%)	Odds ratio estimate (95% CI)	Two-sided p-value	One-sided p-value
PASI 90	AIN457 300 mg (2mL PFS) vs. Placebo	48/72(66.7)	1/71(1.6)	168.39(21.20,1337.22)	<.0001	<.0001
	AIN457 300 mg (2x1mL PFS) vs. Placebo	50/71(70.4)	1/71(1.6)	214.49(26.60,1729.36)	<.0001	<.0001

PASI 100 response after 12 weeks of treatment

(Time Frame: 12 weeks)

Treatment comparison test vs. control	test n*/m (%)	control n*/m (%)	Odds ratio estimate (95% CI)	Two-sided p-value	One-sided p-value
AIN457 300 mg (2mL PFS) vs. Placebo	28/72(38.9)	0/71(0.1)	_		
AIN457 300 mg (2x1mL PFS) vs. Placebo	26/71(36.6)	0/71(0.1)	_		

Number of Participants Achieving Response

(Time Frame: up to week 52)

	Secukinumab 2 mL PFS	Secukinumab 2 x 1 mL PFS	Placebo	Secukinumab 2 mL PFS following placebo	Secukinumab 2 x 1 mL PFS following placebo
Arm/Group Description	Secukinumab 300 mg in one 2 mL pre-filled syringe	Secukinumab 300 mg in 2 pre-filled 1 mL syringes (current approved form)	Placebo	Switched from placebo to secukinumab 300 mg in one 2 mL pre-filled syringe	Switched from placebo to secukinumab 300 mg in pre-filled 1 mL syringes
Number of Participants Analyzed [units: participants]	72	71	71	34	34
Number of Participants Achieving PASI 50/75/90/100 Response or IGA 0 or 1 Response (units: participants)					
Week 1 IGA 0/1	1	0	0	0	0
Week 1 PASI 50	5	5	1	0	1
Week 1 PASI 75	0	2	0	0	0
Week 1 PASI 90	0	0	0	0	0
Week 1 PASI 100	0	0	0	0	0
Week 2 IGA 0/1	2	1	1	0	1

Week 2 PASI 50	18	28	1	1	0
Week 2 PASI 75	4	5	0	0	0
Week 2 PASI 90	0	1	0	0	0
Week 2 PASI 100	0	1	0	0	0
Week 3 IGA 0/1	6	11	1	0	1
Week 3 PASI 50	39	40	5	3	1
Week 3 PASI 75	14	17	0	0	0
Week 3 PASI 90	4	4	0	0	0
Week 3 PASI 100	0	1	0	0	0
Week 4 IGA 0/1	19	23	0	0	0
Week 4 PASI 50	53	52	6	5	1
Week 4 PASI 75	29	32	1	1	0
Week 4 PASI 90	10	13	0	0	0
Week 4 PASI 100	3	3	0	0	0
Week 8 IGA 0/1	43	41	0	0	0
Week 8 PASI 50	66	60	5	3	2
Week 8 PASI 75	53	51	0	0	0
Week 8 PASI 90	35	31	0	0	0
Week 8 PASI 100	8	11	0	0	0
Week 12 IGA 0/1	55	49	1	0	0
Week 12 PASI 50	67	61	5	2	2
Week 12 PASI 75	64	58	1	0	0
Week 12 PASI 90	48	50	1	0	0
Week 12 PASI 100	28	26	0	0	0
Week 16 IGA 0/1	57	52	-	14	5
Week 16 PASI 50	69	61	-	27	20

Week 16 PASI 75	65	60	-	17	13
Week 16 PASI 90	56	55	-	8	4
Week 16 PASI 100	37	31	-	5	1
Week 28 IGA 0/1	64	54	-	30	25
Week 28 PASI 50	71	66	-	33	30
Week 28 PASI 75	69	60	-	32	28
Week 28 PASI 90	62	56	-	26	21
Week 28 PASI 100	44	34	-	16	12
Week 40 IGA 0/1	60	55	-	28	25
Week 40 PASI 50	69	67	-	33	33
Week 40 PASI 75	66	63	-	31	31
Week 40 PASI 90	58	57	-	27	24
Week 40 PASI 100	40	37	-	20	17
Week 52 IGA 0/1	55	55	-	28	26
Week 52 PASI 50	67	67	-	31	32
Week 52 PASI 75	63	62	-	30	31
Week 52 PASI 90	54	58	-	25	26
Week 52 PASI 100	40	37	-	20	16

Summary of Safety

Safety Results

All-Cause Mortality

	AIN457 300 mg (2mL PFS) N = 72	AIN457 300 mg (2x1mL PFS) N = 71	Placebo N = 71	Any AIN457 300 mg (2mL PFS) N = 106	Any AIN457 300 mg (2x1mL PFS) N = 105	Any AIN457 300 mg N = 211
Arm/Group Description	randomized to 300 mg 2 mL PFS	randomized to 300 mg 2 × 1 mL PFS	randomized to placebo	randomized to 300 mg 2 mL PFS and placebo patients re-assigned to 300 mg 2 mL PFS	randomized to 300 mg 2 x 1 mL PFS and placebo patients re-assigned to 300 mg 2 x 1 mL PFS	Any AIN457 300 mg (2 mL PFS) or (2 × 1 mL PFS)
Total participants affected	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Serious Adverse Events by System Organ Class

Time Frame	AEs and SAEs were collected for the maximum duration of treatment and follow up for a participant per protocol for approximately x months. All cause mortality (deaths) was collected from First Patient First Visit (FPFV) to Last Patient Last Visit (LPLV) up to a maximum of 52 weeks
Additional Description	All cause mortality (deaths) was collected for as long as participants could be contacted from First Patient First Visit (FPFV) until Last Patient Last Visit (LPLV) up to a maximum of 52 weeks
Source Vocabulary for Table Default	MedDRA (21.0)
Assessment Type for Table Default	Systematic Assessment

	Treatment period 1 AIN457 300 mg (2mL PFS) N = 72	Treatment period 1 AIN457 300 mg (2x1mL PFS) N = 71	Treatment period 1 Placebo N = 71	Entire Any AIN457 300 mg (2mL PFS) N = 106	Entire Any AIN457 300 mg (2x1mL PFS) N = 105	Entire Any AIN457 300 mg N = 211
Arm/Group Description	Treatment period 1 AIN457 300 mg (2mL PFS)	Treatment period 1 AIN457 300 mg (2x1mL PFS)	Treatment period 1 Placebo	Entire Any AIN457 300 mg (2mL PFS)	Entire Any AIN457 300 mg (2x1mL PFS)	Entire Any AIN457 300 mg
Total participants affected	0 (0.00%)	1 (1.41%)	2 (2.82%)	8 (7.55%)	5 (4.76%)	13 (6.1%)
Cardiac disorders						
Myocardial infarction	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.95%)	1 (0.47%)
Gastrointestinal disorders						
Colitis ulcerative	0 (0.00%)	1 (1.41%)	0 (0.00%)	1 (0.94%)	1 (0.95%)	2 (0.95%)
Crohn's disease	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Diarrhoea	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Gastritis	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Pancreatitis acute	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.95%)	1 (0.47%)
Vomiting	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Infections and infestations						
Appendicitis	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Diverticulitis	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Pharyngitis bacterial	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.95%)	1 (0.47%)
Injury, poisoning and procedural complications						

Fibula fracture	0 (0.00%)	0 (0.00%)	1 (1.41%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Rib fracture	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.95%)	1 (0.47%)
Metabolism and nutrition disorders						
Diabetic ketoacidosis	0 (0.00%)	0 (0.00%)	1 (1.41%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Musculoskeletal and connective tissue disorders						
Psoriatic arthropathy	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Pregnancy, puerperium and perinatal conditions						
Abortion spontaneous	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Psychiatric disorders						
Depression	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)
Respiratory, thoracic and mediastinal disorders						
Haemothorax	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.95%)	1 (0.47%)
Hypoventilation	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.95%)	1 (0.47%)
Pleural effusion	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.95%)	1 (0.47%)
Sleep apnoea syndrome	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.94%)	0 (0.00%)	1 (0.47%)

Other Adverse Events by System Organ Class

Time Frame	AEs and SAEs were collected for the maximum duration of treatment and follow up for a participant per protocol for approximately x months. All cause mortality (deaths) was collected from First Patient First Visit (FPFV) to Last Patient Last Visit (LPLV) up to a maximum of 52 weeks
Additional Description	All cause mortality (deaths) was collected for as long as participants could be contacted from First Patient First Visit (FPFV) until Last Patient Last Visit (LPLV) up to a maximum of 52 weeks
Source Vocabulary for Table Default	MedDRA (21.0)
Assessment Type for Table Default	Systematic Assessment
Frequent Event Reporting Threshold	2%

	Treatment period 1 AIN457 300 mg (2mL PFS) N = 72	**Treatment period 1 AIN457 300 mg (2x1mL PFS) N = 71**	**Treatment period 1 Placebo N = 71**	**Entire Any AIN457 300 mg (2mL PFS) N = 106**	**Entire Any AIN457 300 mg (2x1mL PFS) N = 105**	**Entire Any AIN457 300 mg N = 211**
Arm/Group Description	Treatment period 1 AIN457 300 mg (2mL PFS)	Treatment period 1 AIN457 300 mg (2x1mL PFS)	Treatment period 1 Placebo	Entire Any AIN457 300 mg (2mL PFS)	Entire Any AIN457 300 mg (2x1mL PFS)	Entire Any AIN457 300 mg
Total participants affected	33 (45.83%)	39 (54.93%)	29 (40.85%)	60 (56.60%)	68 (64.76%)	128 (60.66%)
Gastrointestinal disorders						
Diarrhoea	2 (2.78%)	3 (4.23%)	0 (0.00%)	6 (5.66%)	6 (5.71%)	12 (5.69%)
Gastrooesophageal reflux disease	0 (0.00%)	2 (2.82%)	2 (2.82%)	2 (1.89%)	2 (1.90%)	4 (1.90%)
Nausea	2 (2.78%)	2 (2.82%)	1 (1.41%)	3 (2.83%)	3 (2.86%)	6 (2.84%)
Toothache	2 (2.78%)	0 (0.00%)	2 (2.82%)	3 (2.83%)	1 (0.95%)	4 (1.90%)
General disorders and administration site conditions						

Fatigue	2 (2.78%)	0 (0.00%)	1 (1.41%)	6 (5.66%)	3 (2.86%)	9 (4.27%)
Injection site bruising	2 (2.78%)	1 (1.41%)	1 (1.41%)	2 (1.89%)	2 (1.90%)	4 (1.90%)
Injection site erythema	0 (0.00%)	0 (0.00%)	1 (1.41%)	3 (2.83%)	0 (0.00%)	3 (1.42%)
Injection site pruritus	2 (2.78%)	0 (0.00%)	0 (0.00%)	2 (1.89%)	0 (0.00%)	2 (0.95%)
Injection site swelling	0 (0.00%)	2 (2.82%)	0 (0.00%)	0 (0.00%)	2 (1.90%)	2 (0.95%)
Pyrexia	2 (2.78%)	1 (1.41%)	0 (0.00%)	2 (1.89%)	2 (1.90%)	4 (1.90%)
Infections and infestations						
Bronchitis	0 (0.00%)	2 (2.82%)	0 (0.00%)	1 (0.94%)	2 (1.90%)	3 (1.42%)
Conjunctivitis	1 (1.39%)	1 (1.41%)	0 (0.00%)	3 (2.83%)	2 (1.90%)	5 (2.37%)
Folliculitis	1 (1.39%)	0 (0.00%)	0 (0.00%)	2 (1.89%)	4 (3.81%)	6 (2.84%)
Hordeolum	0 (0.00%)	1 (1.41%)	0 (0.00%)	0 (0.00%)	3 (2.86%)	3 (1.42%)
Influenza	0 (0.00%)	1 (1.41%)	0 (0.00%)	2 (1.89%)	8 (7.62%)	10 (4.74%)
Nasopharyngitis	7 (9.72%)	8 (11.27%)	8 (11.27%)	13 (12.26%)	17 (16.19%)	30 (14.22%)
Oral herpes	3 (4.17%)	0 (0.00%)	2 (2.82%)	3 (2.83%)	3 (2.86%)	6 (2.84%)
Pharyngitis	0 (0.00%)	0 (0.00%)	2 (2.82%)	5 (4.72%)	1 (0.95%)	6 (2.84%)
Respiratory tract infection viral	2 (2.78%)	0 (0.00%)	1 (1.41%)	2 (1.89%)	5 (4.76%)	7 (3.32%)
Rhinitis	1 (1.39%)	1 (1.41%)	1 (1.41%)	4 (3.77%)	5 (4.76%)	9 (4.27%)
Sinusitis	0 (0.00%)	2 (2.82%)	0 (0.00%)	1 (0.94%)	2 (1.90%)	3 (1.42%)
Tonsillitis	0 (0.00%)	2 (2.82%)	0 (0.00%)	2 (1.89%)	2 (1.90%)	4 (1.90%)
Upper respiratory tract infection	1 (1.39%)	1 (1.41%)	2 (2.82%)	5 (4.72%)	5 (4.76%)	10 (4.74%)
Vulvovaginal candidiasis	0 (0.00%)	2 (2.82%)	0 (0.00%)	0 (0.00%)	2 (1.90%)	2 (0.95%)

Injury, poisoning and procedural complications						
Ligament sprain	1 (1.39%)	2 (2.82%)	0 (0.00%)	1 (0.94%)	3 (2.86%)	4 (1.90%)
Limb injury	0 (0.00%)	0 (0.00%)	0 (0.00%)	3 (2.83%)	0 (0.00%)	3 (1.42%)
Investigations						
Alanine aminotransferase increased	1 (1.39%)	1 (1.41%)	2 (2.82%)	2 (1.89%)	2 (1.90%)	4 (1.90%)
Aspartate aminotransferase increased	0 (0.00%)	1 (1.41%)	2 (2.82%)	1 (0.94%)	1 (0.95%)	2 (0.95%)
Weight increased	2 (2.78%)	0 (0.00%)	0 (0.00%)	3 (2.83%)	0 (0.00%)	3 (1.42%)
Metabolism and nutrition disorders						
Hypercholesterolaemia	0 (0.00%)	2 (2.82%)	0 (0.00%)	0 (0.00%)	2 (1.90%)	2 (0.95%)
Musculoskeletal and connective tissue disorders						
Arthralgia	0 (0.00%)	1 (1.41%)	1 (1.41%)	3 (2.83%)	3 (2.86%)	6 (2.84%)
Back pain	4 (5.56%)	3 (4.23%)	2 (2.82%)	6 (5.66%)	4 (3.81%)	10 (4.74%)
Myalgia	2 (2.78%)	0 (0.00%)	0 (0.00%)	3 (2.83%)	1 (0.95%)	4 (1.90%)
Nervous system disorders						
Headache	6 (8.33%)	6 (8.45%)	3 (4.23%)	10 (9.43%)	8 (7.62%)	18 (8.53%)
Respiratory, thoracic and mediastinal disorders						
Cough	1 (1.39%)	2 (2.82%)	0 (0.00%)	4 (3.77%)	3 (2.86%)	7 (3.32%)

Oropharyngeal pain	3 (4.17%)	0 (0.00%)	0 (0.00%)	4 (3.77%)	1 (0.95%)	5 (2.37%)
Rhinorrhoea	1 (1.39%)	1 (1.41%)	2 (2.82%)	2 (1.89%)	2 (1.90%)	4 (1.90%)
Skin and subcutaneous tissue disorders						
Pruritus	5 (6.94%)	3 (4.23%)	3 (4.23%)	10 (9.43%)	4 (3.81%)	14 (6.64%)
Psoriasis	0 (0.00%)	2 (2.82%)	0 (0.00%)	0 (0.00%)	3 (2.86%)	3 (1.42%)
Vascular disorders						
Hypertension	0 (0.00%)	1 (1.41%)	3 (4.23%)	3 (2.83%)	5 (4.76%)	8 (3.79%)

Conclusion:

Secukinumab 300 mg in 2 mL PFS demonstrated a rapid onset of response with superior efficacy over placebo in the treatment of patients with moderate to severe chronic plaque-type psoriasis, comparable to the efficacy shown with secukinumab 300 mg in 2 × 1 mL PFS.

The pattern of efficacy was similar between 2 mL PFS and 2 × 1 mL PFS groups. The mean serum secukinumab concentrations were similar between 2 mL PFS and 2 × 1 mL PFS groups.

Both secukinumab PFS treatments were safe, well-tolerated and demonstrated comparable safety profile. No new safety signals were identified during this study, in particular no new signal related to the use of the 2 mL PFS.

This study showed the utility of secukinumab 300 mg self-administration with the 2 mL PFS.

Date of Clinical Trial Report

5 December 2018