



## Clinical trial results:

### A Phase-II, Randomized, Placebo-Controlled, Parallel-Group Clinical Trial to Study the Efficacy and Safety of MK-1029 in Adult Subjects with Persistent Asthma That is Uncontrolled While Receiving Montelukast.

#### Summary

EudraCT number	2015-005054-36
Trial protocol	PL
Global end of trial date	06 September 2017

#### Results information

Result version number	v1 (current)
This version publication date	26 August 2018
First version publication date	26 August 2018

#### Trial information

##### Trial identification

Sponsor protocol code	1029-015
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##### Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT02720081
WHO universal trial number (UTN)	-

Notes:

#### Sponsors

Sponsor organisation name	Merck Sharp & Dohme Corp.
Sponsor organisation address	2000 Galloping Hill Road, Kenilworth, NJ, United States, 07033
Public contact	Clinical Trials Disclosure, Merck Sharp & Dohme Corp., ClinicalTrialsDisclosure@merck.com
Scientific contact	Clinical Trials Disclosure, Merck Sharp & Dohme Corp., ClinicalTrialsDisclosure@merck.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	06 September 2017
Is this the analysis of the primary completion data?	No
Global end of trial reached?	Yes
Global end of trial date	06 September 2017
Was the trial ended prematurely?	No

Notes:

## General information about the trial

Main objective of the trial:

The purpose of this trial is to compare the safety, tolerability, and efficacy of adding MK-1029 to montelukast in adults with persistent asthma that is uncontrolled while receiving montelukast alone. Participants will have a specific genetic marker for clinical efficacy of MK-1029. The primary hypothesis is that when added to montelukast, treatment with MK-1029 is superior to placebo, as demonstrated by an increase in forced expiratory volume in one second (FEV1), measured as the average change from baseline at the end of Week 4 and Week 6 of treatment.

Protection of trial subjects:

This study was conducted in conformance with Good Clinical Practice standards and applicable country and/or local statutes and regulations regarding ethical committee review, informed consent, and the protection of human subjects participating in biomedical research. The following additional measure defined for this individual study was in place for the protection of trial subjects: short-acting beta-agonist via metered-dose inhaler, as albuterol/salbutamol 90 or 100 mcg per inhalation, was to be provided by sites to participants for potential use at home as a rescue medication.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	11 May 2016
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	Guatemala: 20
Country: Number of subjects enrolled	Japan: 77
Country: Number of subjects enrolled	Malaysia: 13
Country: Number of subjects enrolled	Poland: 20
Country: Number of subjects enrolled	South Africa: 12
Worldwide total number of subjects	142
EEA total number of subjects	20

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)	137
From 65 to 84 years	5
85 years and over	0

## Subject disposition

### Recruitment

Recruitment details: -

### Pre-assignment

Screening details:

Inclusion Criteria: symptoms of persistent asthma for at least one year; history of asthma treatments including "as-needed" inhaled short-acting beta-agonists; stable doses of inhaled corticosteroids (ICS), combination ICS/long-acting (inhaled) Beta2-adrenergic agonist (LABA) and/or oral asthma controller(s).

### 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

### Arms

Are arms mutually exclusive?	Yes
<b>Arm title</b>	MK-1029 150 mg + Montelukast 10 mg

Arm description:

Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 150 mg + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.

Arm type	Experimental
Investigational medicinal product name	MK-1029
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

150 mg tablet administered orally, once a day (QD), at bedtime

Investigational medicinal product name	Montelukast
Investigational medicinal product code	
Other name	SINGULAIR® Montelukast sodium
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

10 mg tablet administered orally, QD, at bedtime

Investigational medicinal product name	Albuterol/Salbutamol
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation vapour, solution
Routes of administration	Oral use

Dosage and administration details:

1 or 2 inhalations (90 mcg - 100 mcg per inhalation) 4 times a day (QID) as needed (PRN) as a Rescue Medication

Investigational medicinal product name	MK-1029 Matching-image Placebo
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet

Routes of administration	Oral use
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Dosage and administration details:

Matching-image placebo tablet administered orally, QD, at bedtime

<b>Arm title</b>	MK-1029 Placebo + Montelukast 10 mg
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Arm description:

Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 matching-image placebo + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.

Arm type	Placebo
Investigational medicinal product name	MK-1029 Matching-image Placebo
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

Matching-image placebo tablet administered orally, QD, at bedtime

Investigational medicinal product name	Montelukast
Investigational medicinal product code	
Other name	SINGULAIR® Montelukast sodium
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

10 mg tablet administered orally, QD, at bedtime

Investigational medicinal product name	Albuterol/Salbutamol
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation vapour, solution
Routes of administration	Oral use

Dosage and administration details:

1 or 2 inhalations (90 mcg - 100 mcg per inhalation) 4 times a day (QID) as needed (PRN) as a Rescue Medication

<b>Number of subjects in period 1</b>	<b>MK-1029 150 mg + Montelukast 10 mg</b>	<b>MK-1029 Placebo + Montelukast 10 mg</b>
Started	72	70
Treated	70	69
Completed	68	66
Not completed	4	4
Adverse event, non-fatal	-	3
Protocol deviation	4	1

## Baseline characteristics

### Reporting groups

Reporting group title	MK-1029 150 mg + Montelukast 10 mg
Reporting group description:	
Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 150 mg + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.	
Reporting group title	MK-1029 Placebo + Montelukast 10 mg
Reporting group description:	
Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 matching-image placebo + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.	

Reporting group values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg	Total
Number of subjects	72	70	142
Age categorical Units: Subjects			
Age Continuous Units: years			
arithmetic mean	44.4	42.2	
standard deviation	± 12.1	± 13.0	-
Sex: Female, Male Units: Subjects			
Female	41	46	87
Male	31	24	55
Race (NIH/OMB) Units: Subjects			
American Indian or Alaska Native	2	2	4
Asian	48	42	90
Native Hawaiian or Other Pacific Islander	0	0	0
Black or African American	0	0	0
White	10	16	26
More than one race	12	10	22
Unknown or Not Reported	0	0	0
C Alleles at the pre-specified single nucleotide polymorphism (SNP)			
C Alleles at the pre-specified SNP is the proposed genetic marker for response to MK-1029 for the treatment of asthma.			
Units: Subjects			
1 copy	48	47	95
2 copies	24	23	47
Prior inhaled corticosteroid use Units: Subjects			
Yes	52	54	106
No	20	16	36

Pre beta-agonist ( $\beta$ -agonist) forced expiratory volume in one second Predicted			
If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all randomized participants who received at least one dose of study drug: MK-1029 150 mg + Montelukast 10 mg, n=70; MK-1029 Placebo + Montelukast 10 mg, n=69.			
Units: Liter (L) arithmetic mean standard deviation	2.251 $\pm$ 0.572	2.243 $\pm$ 0.631	-
Forced Expiratory Volume in one second (FEV1)			
FEV1 is the amount of air, measured in liters, forcibly exhaled in 1 second. Analysis population includes all randomized participants who received at least one dose of study drug: MK-1029 150 mg + Montelukast 10 mg, n=70; MK-1029 Placebo + Montelukast 10 mg, n=69.			
Units: Liters arithmetic mean standard deviation	2.264 $\pm$ 0.566	2.234 $\pm$ 0.612	-

## End points

### End points reporting groups

Reporting group title	MK-1029 150 mg + Montelukast 10 mg
Reporting group description: Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 150 mg + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.	
Reporting group title	MK-1029 Placebo + Montelukast 10 mg
Reporting group description: Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 matching-image placebo + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.	

### Primary: Average change from Baseline in FEV1 at Week 4 and Week 6

End point title	Average change from Baseline in FEV1 at Week 4 and Week 6
End point description: FEV1 is the amount of air, measured in liters, forcibly exhaled in 1 second. Pulmonary function tests were to be performed by participants in the morning before dosing. Data presented represent the average change from baseline for Week 4 plus the average change from baseline for Week 6. Analysis population consists of randomized participants who received at least 1 dose of study drug.	
End point type	Primary
End point timeframe: Before the first dose (Baseline) and at the end of Weeks 4 and 6 of treatment	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	69		
Units: Liter				
least squares mean (confidence interval 95%)	0.152 (0.088 to 0.217)	0.046 (-0.020 to 0.111)		

### Statistical analyses

Statistical analysis title	Between-group comparison
Comparison groups	MK-1029 150 mg + Montelukast 10 mg v MK-1029 Placebo + Montelukast 10 mg



Number of subjects included in analysis	139
Analysis specification	Pre-specified
Analysis type	
P-value	= 0.023
Method	Constrained longitudinal data analysis
Parameter estimate	Difference in least squares means
Point estimate	0.107
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.015
upper limit	0.199

## Secondary: Percentage of days with worsening asthma average over Weeks 3 to 6

End point title	Percentage of days with worsening asthma average over Weeks 3 to 6
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### End point description:

A day with worsening asthma was defined as any day during which any of the following occurred: a decrease from baseline in morning (AM) peak expiratory flow (PEF) of more than 20%; AM PEF less than 180 liters/minute (L/min); an increase in  $\beta$ -agonist use of more than 70% (and a minimum increase of at least 2 puffs); an increase from baseline in daytime asthma symptom score of more than 50%; overnight asthma symptom of: Awake "all night"; an asthma attack, as defined by any day when one or more of the following events due to asthma has occurred: corticosteroid use (systemic); unscheduled visit to the doctor or urgent care clinic; unscheduled visit to the emergency department; and/or hospitalization. Analysis population consists of randomized participants who received at least 1 dose of study drug and had at least 80% of days with a complete diary during Weeks 3 to 6. A diary is considered complete if none of the above 6 components used to determine asthma worsening are missing.

End point type	Secondary
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### End point timeframe:

Up to 4 weeks

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	52	44		
Units: Percentage of days				
least squares mean (confidence interval 95%)	16.970 (10.115 to 23.826)	21.746 (14.291 to 29.201)		

## Statistical analyses

Statistical analysis title	Between-group comparison
Comparison groups	MK-1029 150 mg + Montelukast 10 mg v MK-1029 Placebo + Montelukast 10 mg

Number of subjects included in analysis	96
Analysis specification	Pre-specified
Analysis type	
P-value	= 0.352
Method	ANOVA
Parameter estimate	Difference in least squares means
Point estimate	-4.775
Confidence interval	
level	95 %
sides	2-sided
lower limit	-14.92
upper limit	5.37

## Secondary: Percentage of participants who experienced an adverse event (AE)

End point title	Percentage of participants who experienced an adverse event (AE)
End point description:	
An adverse event is defined as any untoward medical occurrence in a patient or clinical investigation participant administered a pharmaceutical product and which does not necessarily have to have a causal relationship with this treatment. Analysis population included all randomized participants who received at least 1 dose of study drug.	
End point type	Secondary
End point timeframe:	
Up to 8 weeks	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	69		
Units: Percentage of participants				
number (not applicable)	25.7	26.1		

## Statistical analyses

Statistical analysis title	Between-group comparison
Statistical analysis description:	
Based on Miettinen & Nurminen	
Comparison groups	MK-1029 150 mg + Montelukast 10 mg v MK-1029 Placebo + Montelukast 10 mg

Number of subjects included in analysis	139
Analysis specification	Pre-specified
Analysis type	
Parameter estimate	Difference in percentages
Point estimate	-0.4
Confidence interval	
level	95 %
sides	2-sided
lower limit	-15
upper limit	14.3

### Secondary: Percentage of participants who discontinued study drug due to an AE

End point title	Percentage of participants who discontinued study drug due to an AE
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End point description:

An adverse event is defined as any untoward medical occurrence in a patient or clinical investigation participant administered a pharmaceutical product and which does not necessarily have to have a causal relationship with this treatment. Analysis population included all randomized participants who received at least 1 dose of study drug.

End point type	Secondary
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End point timeframe:

Up to 6 weeks

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	69		
Units: Percentage of participants				
number (not applicable)	0.0	4.3		

### Statistical analyses

Statistical analysis title	Between-group comparison
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Statistical analysis description:

Based on Miettinen & Nurminen

Comparison groups	MK-1029 150 mg + Montelukast 10 mg v MK-1029 Placebo + Montelukast 10 mg
Number of subjects included in analysis	139
Analysis specification	Pre-specified
Analysis type	
Parameter estimate	Difference in percentages
Point estimate	-4.3

Confidence interval	
level	95 %
sides	2-sided
lower limit	-12.1
upper limit	1

### Secondary: Change from Baseline in alkaline phosphatase (ALP) at Week 6

End point title	Change from Baseline in alkaline phosphatase (ALP) at Week 6
End point description:	
Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had nonmissing change from baseline value at Week 6 for the analysis endpoint, ALP.	
End point type	Secondary
End point timeframe:	
Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	68		
Units: IU/L				
arithmetic mean (standard deviation)				
Baseline	61.16 (± 19.05)	67.96 (± 21.17)		
Change at Week 6	-0.83 (± 7.68)	0.44 (± 9.98)		

### Statistical analyses

No statistical analyses for this end point

### Secondary: Change from Baseline in alanine aminotransferase (ALT) at Week 6

End point title	Change from Baseline in alanine aminotransferase (ALT) at Week 6
End point description:	
Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had nonmissing change from baseline value at Week 6 for the analysis endpoint, ALT.	
End point type	Secondary
End point timeframe:	
Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	68		
Units: IU/L				
arithmetic mean (standard deviation)				
Baseline	22.33 (± 12.75)	19.35 (± 9.77)		
Change at Week 6	-0.99 (± 9.84)	0.34 (± 6.31)		

## Statistical analyses

No statistical analyses for this end point

## Secondary: Change from Baseline in aspartate aminotransferase (AST) at Week 6

End point title	Change from Baseline in aspartate aminotransferase (AST) at Week 6
End point description:	
Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had nonmissing change from baseline value at Week 6 for the analysis endpoint, AST.	
End point type	Secondary
End point timeframe:	
Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	67		
Units: IU/L				
arithmetic mean (standard deviation)				
Baseline	23.53 (± 10.28)	20.64 (± 7.62)		
Change at Week 6	-0.09 (± 12.52)	0.76 (± 7.67)		

## Statistical analyses

No statistical analyses for this end point

### Secondary: Change from Baseline in bilirubin at Week 6

End point title	Change from Baseline in bilirubin at Week 6
End point description: Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, bilirubin.	
End point type	Secondary
End point timeframe: Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	68		
Units: mg/dL				
arithmetic mean (standard deviation)				
Baseline	0.62 (± 0.25)	0.54 (± 0.21)		
Change at Week 6	-0.00 (± 0.25)	-0.01 (± 0.20)		

### Statistical analyses

No statistical analyses for this end point

### Secondary: Change from Baseline in eosinophil (%) at Week 6

End point title	Change from Baseline in eosinophil (%) at Week 6
End point description: Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, eosinophil (%).	
End point type	Secondary
End point timeframe: Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	69	68		
Units: Percent				

arithmetic mean (standard deviation)				
Baseline	4.40 (± 4.54)	3.58 (± 2.65)		
Change at Week 6	0.11 (± 4.29)	0.51 (± 1.96)		

### Statistical analyses

No statistical analyses for this end point

### Secondary: Change from Baseline in neutrophil (%) at Week 6

End point title	Change from Baseline in neutrophil (%) at Week 6
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, neutrophil (%).

End point type	Secondary
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End point timeframe:

Baseline and Week 6

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	69	68		
Units: Percent				
arithmetic mean (standard deviation)				
Baseline	59.13 (± 10.30)	57.86 (± 10.48)		
Change at Week 6	-1.32 (± 10.53)	0.12 (± 9.11)		

### Statistical analyses

No statistical analyses for this end point

### Secondary: Change from Baseline in platelet count at Week 6

End point title	Change from Baseline in platelet count at Week 6
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, platelet count.

End point type	Secondary
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End point timeframe:

Baseline and Week 6

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	68		
Units: 10 <sup>9</sup> /L				
arithmetic mean (standard deviation)				
Baseline	256.85 (± 60.83)	258.44 (± 70.23)		
Change at Week 6	-4.97 (± 30.93)	2.65 (± 29.44)		

### Statistical analyses

No statistical analyses for this end point

### Secondary: Change from Baseline in white blood cell count at Week 6

End point title	Change from Baseline in white blood cell count at Week 6
End point description:	
Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, white blood cell count.	
End point type	Secondary
End point timeframe:	
Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	69	68		
Units: 10 <sup>9</sup> /L				
arithmetic mean (standard deviation)				
Baseline	6.76 (± 2.55)	6.53 (± 1.88)		
Change at Week 6	-0.08 (± 2.00)	0.09 (± 1.51)		

### Statistical analyses

No statistical analyses for this end point



**Secondary: Change from Baseline in hematocrit (%) at Week 6**

End point title	Change from Baseline in hematocrit (%) at Week 6
End point description: Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, hematocrit (%).	
End point type	Secondary
End point timeframe: Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	69	68		
Units: Percent				
arithmetic mean (standard deviation)				
Baseline	42.79 (± 3.98)	42.64 (± 4.62)		
Change at Week 6	-0.10 (± 2.05)	-0.33 (± 1.86)		

**Statistical analyses**

No statistical analyses for this end point

**Secondary: Change from baseline in systolic blood pressure at Week 2**

End point title	Change from baseline in systolic blood pressure at Week 2
End point description: Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 2 for the analysis endpoint, systolic blood pressure.	
End point type	Secondary
End point timeframe: Baseline and Week 2	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	69		
Units: mmHg				
arithmetic mean (standard deviation)				
Baseline	118.89 (± 16.28)	118.83 (± 15.64)		

Change at Week 2	-1.61 ( $\pm$ 9.00)	-1.23 ( $\pm$ 10.79)		
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## Statistical analyses

No statistical analyses for this end point

## Secondary: Change from baseline in systolic blood pressure at Week 4

End point title	Change from baseline in systolic blood pressure at Week 4
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 4 for the analysis endpoint, systolic blood pressure.

End point type	Secondary
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End point timeframe:

Baseline and Week 4

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	67		
Units: mmHg				
arithmetic mean (standard deviation)				
Baseline	119.40 ( $\pm$ 16.22)	118.82 ( $\pm$ 15.88)		
Change at Week 4	-2.13 ( $\pm$ 10.14)	-1.99 ( $\pm$ 11.45)		

## Statistical analyses

No statistical analyses for this end point

## Secondary: Change from baseline in systolic blood pressure at Week 6

End point title	Change from baseline in systolic blood pressure at Week 6
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, systolic blood pressure.

End point type	Secondary
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End point timeframe:

Baseline and Week 6

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	66		
Units: mmHg				
arithmetic mean (standard deviation)				
Baseline	119.40 (± 16.22)	118.77 (± 16.00)		
Change at Week 6	-0.34 (± 9.36)	-2.26 (± 11.11)		

### Statistical analyses

No statistical analyses for this end point

### Secondary: Change from baseline in diastolic blood pressure at Week 2

End point title	Change from baseline in diastolic blood pressure at Week 2
End point description:	
Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 2 for the analysis endpoint, diastolic blood pressure.	
End point type	Secondary
End point timeframe:	
Baseline and Week 2	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	69		
Units: mmHg				
arithmetic mean (standard deviation)				
Baseline	74.40 (± 10.79)	74.45 (± 10.49)		
Change at Week 2	-1.31 (± 7.67)	-0.97 (± 6.88)		

### Statistical analyses

No statistical analyses for this end point

**Secondary: Change from baseline in diastolic blood pressure at Week 4**

End point title	Change from baseline in diastolic blood pressure at Week 4
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 4 for the analysis endpoint, diastolic blood pressure.

End point type	Secondary
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End point timeframe:

Baseline and Week 4

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	67		
Units: mmHg				
arithmetic mean (standard deviation)				
Baseline	74.60 (± 10.88)	74.42 (± 10.49)		
Change at Week 4	-1.56 (± 7.71)	-1.60 (± 8.01)		

**Statistical analyses**

No statistical analyses for this end point

**Secondary: Change from baseline in diastolic blood pressure at Week 6**

End point title	Change from baseline in diastolic blood pressure at Week 6
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, diastolic blood pressure.

End point type	Secondary
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End point timeframe:

Baseline and Week 6

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	66		
Units: mmHg				
arithmetic mean (standard deviation)				

Baseline	74.60 ( $\pm$ 10.88)	74.29 ( $\pm$ 10.51)		
Change at Week 6	-1.18 ( $\pm$ 8.30)	-0.95 ( $\pm$ 7.71)		

## Statistical analyses

No statistical analyses for this end point

## Secondary: Change from baseline in heart rate at Week 2

End point title	Change from baseline in heart rate at Week 2
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 2 for the analysis endpoint, heart rate.

End point type	Secondary
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End point timeframe:

Baseline and Week 2

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	69		
Units: beats/min				
arithmetic mean (standard deviation)				
Baseline	73.21 ( $\pm$ 10.96)	74.20 ( $\pm$ 10.03)		
Change at Week 2	-0.60 ( $\pm$ 7.84)	0.45 ( $\pm$ 9.38)		

## Statistical analyses

No statistical analyses for this end point

## Secondary: Change from baseline in heart rate at Week 4

End point title	Change from baseline in heart rate at Week 4
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 4 for the analysis endpoint, heart rate.

End point type	Secondary
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End point timeframe:

Baseline and Week 4

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	67		
Units: beats/min				
arithmetic mean (standard deviation)				
Baseline	73.25 (± 11.12)	73.96 (± 10.01)		
Change at Week 4	-1.82 (± 9.18)	1.40 (± 9.38)		

### Statistical analyses

No statistical analyses for this end point

### Secondary: Change from baseline in heart rate at Week 6

End point title	Change from baseline in heart rate at Week 6
End point description:	
Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, heart rate.	
End point type	Secondary
End point timeframe:	
Baseline and Week 6	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	66		
Units: beats/min				
arithmetic mean (standard deviation)				
Baseline	73.25 (± 11.12)	73.80 (± 10.01)		
Change at Week 6	-0.84 (± 8.82)	1.06 (± 10.10)		

### Statistical analyses

No statistical analyses for this end point

**Secondary: Change from baseline in respiratory rate at Week 2**

End point title	Change from baseline in respiratory rate at Week 2
End point description: Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 2 for the analysis endpoint, respiratory rate.	
End point type	Secondary
End point timeframe: Baseline and Week 2	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	70	69		
Units: breaths/min				
arithmetic mean (standard deviation)				
Baseline	16.40 (± 2.61)	17.23 (± 3.78)		
Change at Week 2	-0.30 (± 1.93)	-1.17 (± 3.64)		

**Statistical analyses**

No statistical analyses for this end point

**Secondary: Change from baseline in respiratory rate at Week 4**

End point title	Change from baseline in respiratory rate at Week 4
End point description: Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 4 for the analysis endpoint, respiratory rate.	
End point type	Secondary
End point timeframe: Baseline and Week 4	

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	67		
Units: breaths/min				
arithmetic mean (standard deviation)				
Baseline	16.43 (± 2.60)	17.18 (± 3.82)		
Change at Week 4	-0.12 (± 2.58)	-0.97 (± 3.24)		

## Statistical analyses

No statistical analyses for this end point

## Secondary: Change from baseline in respiratory rate at Week 6

End point title	Change from baseline in respiratory rate at Week 6
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End point description:

Baseline was defined at Week 0. If Week 0 measurement was not available, the last non-missing value before treatment was used as Baseline. Analysis population includes all participants who received at least 1 dose of study drug and had non-missing change from baseline value at Week 6 for the analysis endpoint, respiratory rate.

End point type	Secondary
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End point timeframe:

Baseline and Week 6

End point values	MK-1029 150 mg + Montelukast 10 mg	MK-1029 Placebo + Montelukast 10 mg		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	68	66		
Units: breaths/min				
arithmetic mean (standard deviation)				
Baseline	16.43 (± 2.60)	17.20 (± 3.84)		
Change at Week 6	-0.09 (± 2.30)	-1.17 (± 3.20)		

## Statistical analyses

No statistical analyses for this end point



## Adverse events

### Adverse events information

Timeframe for reporting adverse events:

Up to 8 weeks

Adverse event reporting additional description:

Analysis population included all randomized participants who received at least 1 dose of study drug.

Assessment type	Systematic
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### Dictionary used

Dictionary name	MedDRA
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Dictionary version	20.0
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### Reporting groups

Reporting group title	MK-1029 Placebo + Montelukast 10 mg
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Reporting group description:

Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 matching-image placebo + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.

Reporting group title	MK-1029 150 mg + Montelukast 10 mg
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Reporting group description:

Participants receive single-blind MK-1029 matching-image placebo + open-label montelukast 10 mg for a 2 to 4 week run-in period while discontinuing or tapering off asthma controller medications. Participants receive double-blind MK-1029 150 mg + montelukast 10 mg for 6 weeks in the treatment period. Participants can use rescue medication during both periods as needed.

Serious adverse events	MK-1029 Placebo + Montelukast 10 mg	MK-1029 150 mg + Montelukast 10 mg	
Total subjects affected by serious adverse events			
subjects affected / exposed	1 / 69 (1.45%)	0 / 70 (0.00%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	
Respiratory, thoracic and mediastinal disorders			
Asthma			
subjects affected / exposed	1 / 69 (1.45%)	0 / 70 (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	MK-1029 Placebo + Montelukast 10 mg	MK-1029 150 mg + Montelukast 10 mg	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	9 / 69 (13.04%)	6 / 70 (8.57%)	

Respiratory, thoracic and mediastinal disorders			
Asthma			
subjects affected / exposed	8 / 69 (11.59%)	2 / 70 (2.86%)	
occurrences (all)	8	2	
Infections and infestations			
Upper respiratory tract infection			
subjects affected / exposed	4 / 69 (5.80%)	1 / 70 (1.43%)	
occurrences (all)	5	1	
Viral upper respiratory tract infection			
subjects affected / exposed	0 / 69 (0.00%)	4 / 70 (5.71%)	
occurrences (all)	0	4	

## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
18 May 2017	Amendment 1: major revisions included clarification of trial design study period, treatment groups, trial medication terminology, study procedures and time frames, and administrative changes.

Notes:

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### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

None reported