Clinical trial results:
The effect of colchicine on Food-reLAted effort-based decision making in brain and behavIouR in overweight and obesity: the FLAIR-i study.

Summary

EudraCT number	2021-004919-11
Trial protocol	NL
Global end of trial date	20 January 2025

Results information

Result version number	v1 (current)
This version publication date	21 June 2026
First version publication date	21 June 2026

Trial information

Trial identification

Sponsor protocol code	FLAIR-i

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT05785429
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Donders Institute for Brain, Cognition, and Behaviour, Radboud Univesity
Sponsor organisation address	Kapittelweg 29, Nijmegen, Netherlands, 6525 EN
Public contact	Study team, Donders Institute for Brain, Cognition and Behaviour, flairstudie@donders.ru.nl
Scientific contact	Study team, Donders Institute for Brain, Cognition and Behaviour, flairstudie@donders.ru.nl

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	10 January 2026
Is this the analysis of the primary completion data?	Yes
Primary completion date	20 January 2025
Global end of trial reached?	Yes
Global end of trial date	20 January 2025
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

To study the causal role of inflammation in affecting food-related effort-based decision making in brain and behaviour in obese participants by employing a placebo-controlled intervention design with the anti-inflammatory agent colchicine.

Protection of trial subjects:

The trial was conducted in accordance with the Declaration of Helsinki, Good Clinical Practice (GCP) guidelines, and applicable Dutch legislation. Written informed consent was obtained from all participants prior to enrolment and randomisation. Participants were free to withdraw from the study at any time without providing a reason and without consequences.

The study protocol, informed consent procedures, and participant information materials were reviewed and approved by an accredited Medical Research Ethics Committee before study initiation. Participants were monitored for adverse events throughout the study and had access to the research team and study physician during the intervention period. Emergency unblinding procedures were available when medically required.

As colchicine was administered solely for research purposes, treatment could be discontinued at any time if adverse effects occurred. To minimize risk, participants underwent screening for eligibility, including assessment of renal function and relevant exclusion criteria such as liver disease and concomitant medications with potential colchicine interactions. Participants' general practitioners were informed of study participation with participant consent.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	01 January 2022
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	Netherlands: 64
Worldwide total number of subjects	64
EEA total number of subjects	64

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)	64
From 65 to 84 years	0
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

Participants were included in the FLAIR-i study in two ways: after participation in the FLAIR-o study (NL77503.091.21), or through recruitment without participation in the FLAIR-o study.

Pre-assignment

Screening details:

Women aged 18–59 years were screened for eligibility. Inclusion criteria included obesity (BMI >30 kg/m²) and evidence of low-grade inflammation, defined as a C-reactive protein (CRP) concentration >3.0 mg/L.

Period 1

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

Arms

Are arms mutually exclusive?	Yes
Arm title	Colchicine

Arm description:

Participants received one capsule of colchicine 0.5mg daily.

Arm type	Experimental
Investigational medicinal product name	Colchicine
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Capsule
Routes of administration	Oral use

Dosage and administration details:

Colchicine, 0.5mg/d, oral administration.

Arm title	Placebo

Arm description:

Participants received one placebo capsule daily.

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

Dosage and administration details:

Placebo, one capsule/day, oral administration

Number of subjects in period 1	Colchicine	Placebo
Started	31	33
Completed	28	31
Not completed	3	2
Consent withdrawn by subject	1	1
Adverse event, non-fatal	2	1

Baseline characteristics

Reporting groups	
Reporting group title	Colchicine
Reporting group description:	
Participants received one capsule of colchicine 0.5mg daily.	
Reporting group title	Placebo
Reporting group description:	
Participants received one placebo capsule daily.	

Reporting group values	Colchicine	Placebo	Total
Number of subjects	31	33	64
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)	31	33	64
From 65-84 years	0	0	0
85 years and over	0	0	0
Age continuous Units: years			
arithmetic mean	45	46	
standard deviation	± 11	± 9	-
Gender categorical			
Only women were included in this study.			
Units: Subjects			
Female	31	33	64
Male	0	0	0
C-reactive protein Units: mg/l			
arithmetic mean	9.2	7.2	
standard deviation	± 6.8	± 4.6	-

End points

End points reporting groups	
Reporting group title	Colchicine
Reporting group description:	
Participants received one capsule of colchicine 0.5mg daily.	
Reporting group title	Placebo
Reporting group description:	
Participants received one placebo capsule daily.	

Primary: Change in low-grade inflammation (INFLA-score)	
End point title	Change in low-grade inflammation (INFLA-score)
End point description:	
Low-grade inflammation was measured by the INFLA-score, a composite score of C-reactive protein, white blood cell count, neutrophil/lymphocyte ratio and blood platelets.	
End point type	Primary
End point timeframe:	
Follow-up (at 12 weeks) - Baseline	

End point values	Colchicine	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	24	25		
Units: SD				
arithmetic mean (standard deviation)				
Baseline	0.08 (± 0.65)	-0.13 (± 0.50)		
Follow-up	-0.25 (± 0.54)	-0.03 (± 0.53)		

Statistical analyses

Statistical analysis title	Mixed regression model: Change in INFLA-score
Comparison groups	Colchicine v Placebo
Number of subjects included in analysis	49
Analysis specification	Pre-specified
Analysis type	superiority
P-value	< 0.001
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-0.1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-0.15
upper limit	-0.04

Primary: Change in effort aversion

End point title	Change in effort aversion
End point description:	
Effort aversion was measured by a food-related effort-based decision making task.	
End point type	Primary
End point timeframe:	
Follow-up (at 12 weeks) - Baseline	

End point values	Colchicine	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	24	25		
Units: log-odds				
arithmetic mean (standard deviation)				
Baseline	-4.41 (± 2.06)	-4.27 (± 1.57)		
Follow-up	-4.61 (± 1.95)	-4.73 (± 1.52)		

Statistical analyses

Statistical analysis title	Mixed regression model: Change in effort aversion
Statistical analysis description:	
The mixed logistic regression model was adjusted for age, baseline BMI and baseline C-reactive protein level.	
Comparison groups	Colchicine v Placebo
Number of subjects included in analysis	49
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.044
Method	Mixed models analysis
Parameter estimate	Odds ratio (OR)
Point estimate	1.32
Confidence interval	
level	95 %
sides	2-sided
lower limit	1.01
upper limit	1.75

Primary: Change in effort-related signal in the dorsomedial frontal cortex

End point title	Change in effort-related signal in the dorsomedial frontal cortex
End point description:	
Effort-related signal in the dorsomedial frontal cortex was measured during a food-related effort-based	

decision making task using functional MRI.

End point type	Primary

End point timeframe:

Follow-up (at 12 weeks) - Baseline

End point values	Colchicine	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	24	25		
Units: a.u.				
arithmetic mean (standard deviation)				
Baseline	0.38 (± 0.61)	0.17 (± 0.65)		
Follow-up	0.19 (± 0.65)	0.49 (± 0.68)		

Statistical analyses

Statistical analysis title	Mixed regression model: Change in ROI signal

Statistical analysis description:

The mixed linear regression model was adjusted for age, baseline BMI and baseline C-reactive protein level.

Comparison groups	Colchicine v Placebo
Number of subjects included in analysis	49
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.053
Method	Mixed models analysis
Parameter estimate	Mean difference (final values)
Point estimate	-0.13
Confidence interval	
level	95 %
sides	2-sided
lower limit	-0.26
upper limit	0

Adverse events

Adverse events information	
Timeframe for reporting adverse events:	
Adverse Events were collected from the First Patient First Visit (FPFV) until the Last Patient Last Visit (LPLV).	
Assessment type	Systematic

Dictionary used	
Dictionary name	MedDRA
Dictionary version	26

Reporting groups	
Reporting group title	Colchicine
Reporting group description:	
Participants received one capsule of colchicine 0.5mg daily.	
Reporting group title	Placebo
Reporting group description:	
Participants received one placebo capsule daily.	

Serious adverse events	Colchicine	Placebo	
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 31 (0.00%)	0 / 33 (0.00%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	

Frequency threshold for reporting non-serious adverse events: 0 %

Non-serious adverse events	Colchicine	Placebo	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	28 / 31 (90.32%)	28 / 33 (84.85%)	
Neoplasms benign, malignant and unspecified (incl cysts and polyps)			
Schwannoma			
subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Nervous system disorders			
Headache			
subjects affected / exposed	16 / 31 (51.61%)	15 / 33 (45.45%)	
occurrences (all)	33	24	
Neuropathy peripheral			

subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Dizziness			
subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Restless legs syndrome			
subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Dysgeusia			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	
General disorders and administration site conditions			
Fatigue			
subjects affected / exposed	2 / 31 (6.45%)	6 / 33 (18.18%)	
occurrences (all)	2	8	
Hot flush			
subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Blood and lymphatic system disorders			
Bruising tendency			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	
Immune system disorders			
Insect bite hypersensitivity			
subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Gastrointestinal disorders			
Abdominal discomfort	Additional description: Gastrointestinal disorder NOS (Not Otherwise Specified)		
subjects affected / exposed	13 / 31 (41.94%)	17 / 33 (51.52%)	
occurrences (all)	17	22	
Reproductive system and breast disorders			
Heavy menstrual bleeding			
subjects affected / exposed	5 / 31 (16.13%)	2 / 33 (6.06%)	
occurrences (all)	7	3	
Uterine polyp			

subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Respiratory, thoracic and mediastinal disorders			
Dyspnoea			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	
Skin and subcutaneous tissue disorders			
Rash			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	
Musculoskeletal and connective tissue disorders			
Arthralgia			
subjects affected / exposed	11 / 31 (35.48%)	7 / 33 (21.21%)	
occurrences (all)	19	10	
Bursitis infective			
subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Osteomyelitis			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	
Infections and infestations			
Nasopharyngitis			
subjects affected / exposed	10 / 31 (32.26%)	20 / 33 (60.61%)	
occurrences (all)	11	26	
Pneumonia			
subjects affected / exposed	1 / 31 (3.23%)	0 / 33 (0.00%)	
occurrences (all)	1	0	
Periodontitis			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	
Urinary tract infection			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	
Cellulitis			
subjects affected / exposed	0 / 31 (0.00%)	1 / 33 (3.03%)	
occurrences (all)	0	1	

Otitis media subjects affected / exposed occurrences (all)	1 / 31 (3.23%) 1	0 / 33 (0.00%) 0	

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
01 August 2022	Changes to the in- and exclusion criteria, most notably an extension of the age range from 18–55 to 18–59 years and the exclusion of participants who had undergone bariatric surgery within the past 5 years.
12 October 2022	Addition of an external partner for the execution of the study.
01 March 2023	Changes to the inclusion and exclusion criteria related to inflammation and BMI, including modification of the CRP threshold from a fixed range of 3–10 mg/L for all participants to a BMI-dependent range (3–22.1 mg/L for participants with BMI >31 kg/m² and 3–10 mg/L for BMI <31 kg/m²), and an adjustment of the BMI inclusion criterion from >27 kg/m² to >30 kg/m².
13 September 2023	Changes in the recruitment strategy, compensation costs, and inclusion criteria (inclusion of left-handed participants).
27 March 2024	Changes in the recruitment and inclusion strategy.

Notes:

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported