Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Effect of synbiotics supplementation and anti-inflammatory-antioxidant rich diet on inflammatory marker and clinical manifestations in patients with progressive forms of Multiple Sclerosis

Protocol summary

Study aim

To assess the effects of synbiotics supplementation and anti-inflammatory-antioxidant-rich diet on the inflammatory marker and clinical manifestations in patients with progressive forms of Multiple Sclerosis (MS).

Design

A randomized double-blind controlled clinical trial with two-arm parallel groups on 70 eligible patients (n of intevention= 35; n of control= 35).

Settings and conduct

The present study will be conducted in Isfahan MS center. An anti-inflammatory-antioxidant-rich diet, based on Dietary Inflammatory Index (DII) and Oxygen Radical Absorbance Capacity (ORAC), co-intervented by synbiotic supplement will be prescribed for 4 months. The severity of clinical manifestations and the fecal level of calprotectin will be measured before and after the intervention.

Participants/Inclusion and exclusion criteria

Inclusion criteria: progressive MS patients (diagnosed by a neurologist according to expanded disability status scale) who agree to participate in the study, aged between 20-60 years old. Exclusion criteria: non-compliance with diets and supplements (adherence less than 80%), participation in the other clinical trials, the occurrence of acute medical conditions 6 months before and during the study period.

Intervention groups

Intervention group 1: synbiotic supplement (one capsule contains lactobacillus casei, lactobacillus acidophilus, lactobacillus plantarum, lactobacillus bulgaricus, bifidobacterium breve, bifidobacterium infantis, bifidobacterium longum, streptococcus thermophilus) in dose of 4.5* 10^11 per day and fructooligosaccharide 100 mg plus anti-inflammatory-antioxidant-rich diet. Intervention group 2: placebo capsule (contains starch) plus dietary recommendations.

Main outcome variables

DII; ORAC; fecal calprotectin; quality of life; fatigue; pain; disease activity; visual impairment; depression; anxiety; anthropometric indices

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20141108019853N7**
Registration date: **2021-08-15, 1400/05/24**
Registration timing: **registered_while_recruiting**

Last update: **2021-08-15, 1400/05/24**
Update count: **0**

Registration date

2021-08-15, 1400/05/24

Registrant information

Name

Zamzam Paknahad

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 31 3792 3166

Email address

paknahad@hlth.mui.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-08-13, 1400/05/22

Expected recruitment end date

2021-12-16, 1400/09/25

Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Effect of synbiotics supplementation and anti-inflammatory-antioxidant rich diet on inflammatory marker and clinical manifestations in patients with progressive forms of Multiple Sclerosis

Public title
Effect of synbiotic and anti-inflammatory-antioxidant rich diet in progressive multiple sclerosis
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Progressive MS Patients based on EDSS criteria (RRMS, PPMS, PRMS), who agree to participate in the study. Aged between 20-60 years old Having basic literacy Mental acceptance for participation and compliance
Exclusion criteria:
Non-compliance with diet and supplement (adherence rate below 80 %) participation in other clinical trials at one time The occurrence of acute & serious medical conditions (urgent surgeries, accidents) COVID-19 infection (during the study) Taking immunomodulatory drugs - commons in relapsing-remitting MS- during and 6 months before the intervention (such as interferons, Sphingosine-1-phosphate receptor modulators, monoclonal antibodies, dimethyl fumarate) Regular consumption of anti-anxiety and anti-depressant drugs during and six months before the intervention Taking the other forms of synbiotic, probiotic, prebiotic, and postbiotic supplements during and 6 months before the intervention Taking antibiotics during and 2 months before the intervention Taking corticosteroids (for example methylprednisolone in doses more than 30 mg/day) and adrenocorticotropin hormone as full doses during and 6 months before the intervention Regular smoking (at least two cigarettes per day) Patients with pancreatitis, sepsis, dialysis, chronic diarrhea, and inpatient individuals with or without central venous catheter Patients who are waiting for abdominal surgeries Patients with acute immune deficiencies such as AIDS and cancers Patients with short bowel syndrome or at risk for mesenteric ischemia Patients who are in pregnancy or breastfeeding period or those with pregnancy attempt The unwillingness to cooperate
Age
From **20 years** old to **60 years** old
Gender
Both

Phase
3
Groups that have been masked

- Participant
- Outcome assessor
- Data analyser

Sample size
Target sample size: **70**
Randomization (investigator's opinion)
Randomized
Randomization description
Randomization will be conducted based on https://www.sealedenvelope.com/simple-randomiser/v1/lists. Each block has a capacity for 6 subjects. Then, within each block, subjects will be randomly assigned to treatment or placebo. Random assignment will be done using a random chain that will be extracted from the site. Randomization will be stratified based on the type of progressive MS (three types: PPMS, SPMS, PRMS).
Blinding (investigator's opinion)
Double blinded
Blinding description
Synbiotic supplements and placebo (identical in color, shape, and odor) will be packaged in similar boxes and the researcher and patients will not be informed of the contents of the packs until the end of the study. In addition, the individualized diets and dietary recommendations will be packaged in similar packets. Furthermore, the outcome assessor and data analyzer will be blinded to treatment allocation. HOWEVER, blinding of the investigator is not possible because of obvious differences between the intervention diet (in the intervention group) and dietary recommendations (in the control group).
Placebo
Used
Assignment
Parallel
Other design features
The current study is a co-intervention of Diet & Nutritional Supplement.

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Isfahan University of Medical Sciences
Street address
Hezar Jerib Ave.
City
Isfahan
Province
Isfehan
Postal code
8174673461
Approval date
2021-07-26, 1400/05/04
Ethics committee reference number
IR.MUI.RESEARCH.REC.1400.195

Health conditions studied

1

Description of health condition studied
Multiple Sclerosis
ICD-10 code
G35
ICD-10 code description
Multiple sclerosis

Primary outcomes

1

Description
Fecal level of calprotectin
Timepoint
At baseline and after 16 weeks
Method of measurement
Enzyme Linked Immuno Sorbent Assay (ELISA) kits

2

Description
Disease activity
Timepoint
At baseline and after 16 weeks
Method of measurement
scoring form of Expanded Disability Status Scale (EDSS)

3

Description
Fatigue severity
Timepoint
At baseline and after 16 weeks
Method of measurement
Modified Fatigue Impact Scale 21 items (MFIS) questionnaire

Secondary outcomes

1

Description
The inflammatory status of diet
Timepoint
At baseline and after 16 weeks
Method of measurement
Calculation of Dietary Inflammatory Index (DII) score

2

Description
The antioxidant level of diet
Timepoint
At baseline and after 16 weeks
Method of measurement
Calculation of Oxygen Radical Absorbance Capacity (ORAC) score

3

Description
Quality of life
Timepoint
At baseline and after 16 weeks
Method of measurement
Multiple Sclerosis Quality of Life (MSQOL-54) 54 items

4

Description
Pain severity
Timepoint
At baseline and after 16 weeks
Method of measurement
Global Pain Scale (GPS)

5

Description
Sexual satisfaction level
Timepoint
At baseline and after 16 weeks
Method of measurement
Sexual Satisfaction Scale (SSS)

6

Description
Bladder control evaluation
Timepoint
At baseline and after 16 weeks
Method of measurement
Bladder Control Scale (BLCS) 4 items

7

Description
Bowl control evaluation
Timepoint
At baseline and after 16 weeks
Method of measurement
Bowel Control Scale (BWCS) 5 items

8

Description
Impact of Vision Impairment evaluation
Timepoint
At baseline and after 16 weeks
Method of measurement
Impact of Vision Impairment (IVI) 32 items

9

Description
Cognitive impairment/depression evaluation
Timepoint
At baseline and after 16 weeks
Method of measurement
Perceived Deficits Questionnaire-Depression (PDQ-D) 20 items

10

Description
Anxiety severity
Timepoint
At baseline and after 16 weeks
Method of measurement
State-Trait Anxiety Inventory (STAI 1 and 2) 20 items

11

Description
Gastrointestinal evaluation
Timepoint
At baseline and after 16 weeks
Method of measurement
Gastrointestinal Symptom Rating Scale (GSRS) 15 items

12

Description
Body weight
Timepoint
At baseline and after 16 weeks
Method of measurement
SECA digital scale

13

Description
Body mass index
Timepoint
At baseline and after 16 weeks
Method of measurement
weight (in kilograms) divided by the square of height (in metres)

14

Description
Percent of body fat
Timepoint
At baseline and after 16 weeks
Method of measurement
Deurenberg equation

15

Description
Waist circumference
Timepoint
At baseline and after 16 weeks
Method of measurement
tape

16

Description
Hip circumference
Timepoint
At baseline and after 16 weeks
Method of measurement
tape

17

Description
Waist-to-hip ratio
Timepoint
At baseline and after 16 weeks
Method of measurement
ratio calculation

18

Description
Triceps Skinfold thickness
Timepoint
At baseline and after 16 weeks
Method of measurement
Skinfold Caliper

19

Description
Mid-Arm Circumference (MAC)
Timepoint
At baseline and after 16 weeks
Method of measurement
tape

20

Description
corrected mid-Arm Muscle Area (cAMA)
Timepoint
At baseline and after 16 weeks
Method of measurement
cAMA equation

21

Description
Physical activity
Timepoint
At baseline and after 16 weeks
Method of measurement
three-day record

Intervention groups

1

Description
Intervention group: administration of synbiotic supplement (one capsule contains Lactobacillus casei, Lactobacillus acidophilus, Lactobacillus plantarum, Lactobacillus bulgaricus, Bifidobacterium breve, Bifidobacterium infantis, Bifidobacterium longum, Streptococcus thermophilus) in dose of 4.5* 10^11 per day and FOS 100 mg/day plus anti-inflammatory-antioxidant rich diet for 4 months (16 weeks)
Category
Treatment - Other

2

Description
Control group: one placebo capsule per day (contains starch) plus dietary recommendations and energy adjustment for 4 months (16 weeks)
Category
Placebo

Recruitment centers

1

Recruitment center
Name of recruitment center
M.S Isfahan Center
Full name of responsible person
Ahmad Chitsaz
Street address
Bahonar St.
City
Isfahan
Province
Isfehan
Postal code
8174673461
Phone
+98 31 3345 8887
Email
chitsaz@med.mui.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Esfahan University of Medical Sciences
Full name of responsible person
Shaghayegh Haghjooy Javanmard
Street address
Hezar Jerib Ave.
City
Isfahan
Province
Isfehan
Postal code
8174673461
Phone
+98 31 3668 8138
Email
sh_haghjoo@med.mui.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Esfahan University of Medical Sciences
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Esfahan University of Medical Sciences
Full name of responsible person
Amir Reza Moravejolahkami
Position
Student
Latest degree
Master
Other areas of specialty/work
Nutrition
Street address
Hezar Jerib Ave.
City
Isfahan
Province
Isfehan
Postal code
8174673461
Phone
+98 31 3335 4453
Email
amimohs@gmail.com

Person responsible for scientific inquiries

Contact
Name of organization / entity
Esfahan University of Medical Sciences
Full name of responsible person
Zamzam Paknahad
Position
Professor
Latest degree
Ph.D.
Other areas of specialty/work
Nutrition
Street address
Hezar Jerib Ave.
City
Isfahan
Province
Isfehan
Postal code
8174673461
Phone
+98 31 3792 3166
Email
paknahad@hlth.mui.ac.ir

Person responsible for updating data

Contact

Name of organization / entity
Esfahan University of Medical Sciences

Full name of responsible person
Zamzam Paknahad

Position
Professor

Latest degree
Ph.D.

Other areas of specialty/work
Nutrition

Street address
Hezar Jerib Ave.

City
Isfahan

Province
Isfehan

Postal code
8174673461

Phone
+98 31 3792 3166

Email
paknahad@hlth.mui.ac.ir

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available

Study Protocol
No - There is not a plan to make this available

Statistical Analysis Plan
No - There is not a plan to make this available

Informed Consent Form
No - There is not a plan to make this available

Clinical Study Report
Yes - There is a plan to make this available

Analytic Code
No - There is not a plan to make this available

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document
The major part of results will be available for individuals. Moreover, the datasets used and/or analyzed during the current study are available from the investigators, on reasonable request.

When the data will become available and for how long
The data will become available 12 months after the results' publication.

To whom data/document is available
The data/document is available for all individuals, on reasonable request.

Under which criteria data/document could be used
The data/document must be used for conducting similar studies and therapeutic approaches, on reasonable request from the investigators.

From where data/document is obtainable
mail to paknahad@hlth.mui.ac.ir or a.moravej@mail.mui.ac.ir

What processes are involved for a request to access data/document
The data will be sent as soon as possible, after receiving the request.

Comments