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# A medical nutrition formula for the treatment of relapsing multiple sclerosis

**Submission date**
09/05/2011

**Recruitment status**
No longer recruiting

**Registration date**
19/05/2011

**Overall study status**
Completed

**Last Edited**
18/12/2020

**Condition category**
Nervous System Diseases

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

## Plain English summary of protocol

Background and study aims
Multiple sclerosis is a chronic disease that attacks the brain, spinal cord and optic nerves. In milder cases there may be numbness in the limbs, while in severe cases the patient becomes paralyzed and/or blind.
This study addresses the major issue of the relationship between nutrition and neurodegenerative diseases, specifically multiple sclerosis. Omega-3 and omega-6 fatty acids have been found to be involved in the recovery mechanisms and restoration and regeneration of the nerves. None of the existing drugs for multiple sclerosis reliably produces a complete remission of symptoms, none have been shown to be able to trigger recovery mechanisms, and all are associated with severe side effects. Hence, there remains a major need for new and more effective treatments. The aim of this study is to test the effectiveness and safety of a new formula for multiple sclerosis treatment.

Who can participate?
Patients aged 18 to 65 with relapsing remitting multiple sclerosis

What does the study involve?
Participants are randomly allocated to one of four groups. Group A receive a daily oral liquid formula containing fatty acids and vitamins. Group C receive an antioxidant vitamin. Group B receive a mixture of treatments A and C. Group D receive a placebo (dummy) formula of pure virgin olive oil. All participants take their allocated supplement once daily for a total of 30 months. Participants are assessed at the start of the study, after 3, 9, 15, 21 and 24 months of treatment, and after the onset of any new symptoms, and are followed up for an additional 12 months after the end of the study.

What are the possible benefits and risks of participating?
Participants are asked to visit the hospital more frequently and therefore are monitored more closely. Participating will help the trialists to investigate a new possible approach for the treatment of neurodegenerative diseases and specifically multiple sclerosis. The risks are extremely low and are limited to nausea. The substances used in the formulas can normally be found in an everyday diet.

Where is the study run from?
Cyprus Institute of Neurology and Genetics

When is the study starting and how long is it expected to run for?
July 2007 to December 2010

Who is funding the study?
Cyprus Ministry of Commerce, Industry and Tourism

Who is the main contact?
Dr Ioannis Patrikios
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# Contact information

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Scientific

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# Additional identifiers

### Protocol serial number
N/A

# Study information

### Scientific Title
A novel medical nutrition formula indicates a possible new approach for relapsing multiple sclerosis treatment: a double-blind, randomized, placebo-controlled clinical trial of efficacy and safety

### Study objectives
1. Docosahexaenoic acid (DHA)/ Eicosapentaenoic acid (EPA)/ Gamma-Linolenic Acid (GLA)/ linoleic acid (LA) polyunsaturated fatty acids along with specific monounsaturated fatty acids, minor quantity of specific saturated fatty acids and specific antioxidant vitamins (E and A) and gamma-tocopherol within a specific ratio, quantity and quality can possibly interfere with all known pathophysiological mechanisms in multiple sclerosis (MS)
2. This could result in increased treatment efficacy, reduction of annual relapses rate (ARR) and disability accumulation and can possibly trigger remyelination and neuroprotection

## Ethics approval required
Old ethics approval format

## Ethics approval(s)
Cyprus Bioethics Committee, 06/09/2005, ref: ΕΕΒΚ/ΕΠ/2005/10

## Study design
Single-center randomized double-blind placebo-controlled parallel trial

## Primary study design
Interventional

## Study type(s)
Treatment

## Health condition(s) or problem(s) studied
Multiple sclerosis

## Interventions
The daily oral liquid formula dose of intervention A, was a mixture of:
1. EPA (about 1650mg)
2. DHA (about 4650mg)
3. GLA (about 2000mg)
4. LA (about 3850mg)
5. Total other omega-3 (about 600mg)
6. Total monounsaturated fatty acids (MUFA) (about 1700mg)
7. Total saturated fatty acids (SFA) (18:0 about 160mg, 16:0 about 650mg)
8. Vitamin A (about 0.6mg)
9. Vitamin E (about 22mg)

Intervention C was composed of pure γ-tocopherol (760mg) dispersed in pure virgin olive oil (16137 mg) as delivery vehicle
Intervention B was the mixture of intervention formula A with Intervention C without the pure virgin olive oil
Intervention D (placebo) was composed of pure virgin olive oil (16930mg)

Food grade citrus-aroma was added in each intervention formula to make up a total dosage of 19.5ml of solution per day once daily for a total of 30 months. The first 6 months of the study were used as normalization period for the interventions agents to exert their beneficial effect. All preparations and the placebo had identical appearance and smell. The bottles containing the syrup were labeled with medication code numbers that were unidentifiable for patients as well as investigators

## Intervention Type
Supplement

## Primary outcome(s)
Current primary outcome measure(s) as of 11/04/2012:
The study was designed to end 30 months after enrolment and neurological and clinical assessments were scheduled at entry baseline and 3, 9, 15, 21 and 24 months on-treatment. Patients were also seen at unscheduled visits within 48 hours after the onset of new neurologic

symptoms. Primary outcomes were the number of relapses per patient, mean number of relapses, frequency of relapses and ARR. The key primary outcome was the ARR. Relapses were defined as new neurologic symptoms or worsening of pre-existing symptoms (that were stable for at least 1 month) not associated with fever or infection that lasted for at least 24 hours. The patients were followed up for additional 12 months after completion of the trial and the relapses were reported (31/12/2009 to 31/12/2010)

Previous primary outcome measure(s):
The study was designed to end 30 months after enrolment and neurological and clinical assessments were scheduled at entry baseline and 3, 9, 15, 21 and 24 months on-treatment. Patients were also seen at unscheduled visits within 48 hours after the onset of new neurologic symptoms. Primary outcomes were the number of relapses per patient, mean number of relapses, frequency of relapses and ARR. Relapses were defined as new neurologic symptoms or worsening of pre-existing symptoms (that were stable for at least 1 month) not associated with fever or infection that lasted for at least 24 hours. The patients were followed up for additional 12 months after completion of the trial and the relapses were reported (31/12/2009 to 31/12 /2010)

### Key secondary outcome(s))
Current secondary outcome measure(s) as of 11/04/2012:
1. The key secondary end point was the time to confirmed disability progression, defined as an increase of one point in the EDSS score, confirmed after 6 months, with an absence of relapse at the time of assessment and with all EDSS scores measured during that time meeting the criteria for disability progression.
2. A post-hoc analysis was performed on brain T2-weighted MRI scans at the end of the study for the per-protocol participants of the group receiving the highest effective intervention vs. placebo. The comparison was made only versus the available archival MRI scans up to three months before the enrollment date. MRI scans performed and blinded analyzed at an MRI evaluation center.
3. The final EDSS score was confirmed 6 months after the end of the study
4. We considered disability deteriorating when patient deteriorated by at least 1.0 EDSS point between two successive clinical evaluations in relation to the entry EDSS score that was sustained for 24 weeks (progression could not be confirmed during a relapse)

Previous secondary outcome measure(s):
1. The time to confirmed disability progression, defined as an increase of one point in the EDSS score, confirmed after 6 months, with an absence of relapse at the time of assessment and with all EDSS scores measured during that time meeting the criteria for disability progression
2. The number of patients with new or enlarging T2-weighted lesion load on Brain MRI at two years (end of study) in comparison to the corresponding ones from the enrolment period
3. The final EDSS score was confirmed 6 months after the end of the study
4. We considered disability deteriorating when patient deteriorated by at least 1.0 EDSS point between two successive clinical evaluations in relation to the entry EDSS score that was sustained for 24 weeks (progression could not be confirmed during a relapse)
5. T2-weighted MRI scans of the brain were obtained during enrollment (from patients regular medical follow up) and at the end of the two years of the clinical trial duration

### Completion date
31/12/2009

## Eligibility

### Key inclusion criteria
1. Men and women
2. Ages of between 18 and 65 years
3. Diagnosis of relapsing remitting Multiple Sclerosis (RRMS)
4. A score of 0.0 to 5.5 on the Expanded Disability Status Scale (EDSS)
5. Undergone MRI showing lesions consistent with MS
6. At least one medically documented relapse within the 24 months before beginning of the study and who had been receiving approximately the same disease modified treatment (DMT) during the two years before enrolment

### Participant type(s)
Patient

### Healthy volunteers allowed
No

### Age group
Adult

### Lower age limit
18 years

### Sex
All

### Total final enrolment
80

### Key exclusion criteria
1. Prior immunosuppressants or monoclonal antibodies therapy
2. Pregnancy or nursing
3. Any severe disease other than MS compromising organ function
4. Patients with primary progressive or secondary progressive disease
5. Patients known to have a history of recent drug or alcohol abuse
6. Unable to follow the protocol from the intent to treat analysis (ITT)
7. Any patients that changed type of the disease (i.e RRMS to secondary progressive)
8. Consumption of any additional food supplement formula, vitamin of any type or any form of polyunsaturated fatty acid (PUFA) at any time during the trial

### Date of first enrolment
01/07/2007

### Date of final enrolment
31/12/2009

## Locations

### Countries of recruitment
Cyprus

**Study participating centre**
**6 International Airport Avenue**
Nicosia
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1683

# Sponsor information

**Organisation**
Ministry of Commerce Industry and Tourism (Cyprus)

**ROR**
https://ror.org/016bxe465

# Funder(s)

**Funder type**
Government

**Funder Name**
Cyprus Ministry of Commerce, Industry and Tourism (Cyprus)

# Results and Publications

## Individual participant data (IPD) sharing plan

**IPD sharing plan summary**
Not provided at time of registration

**Study outputs**

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Results article | results | 17/04/2013 | 18/12/2020 | Yes | No |