

# Pilot study to investigate if reducing serotonin levels in patients with chronic fatigue syndrome is effective.

<b>Submission date</b>	<b>Recruitment status</b>	<input type="checkbox"/> Prospectively registered
18/11/2012	No longer recruiting	<input type="checkbox"/> Protocol
<b>Registration date</b>	<b>Overall study status</b>	<input type="checkbox"/> Statistical analysis plan
23/04/2013	Completed	<input checked="" type="checkbox"/> Results
<b>Last Edited</b>	<b>Condition category</b>	<input type="checkbox"/> Individual participant data
11/06/2015	Nervous System Diseases	

## Plain English summary of protocol

### Background and study aims

Chronic fatigue syndrome (CFS) is still an enigmatic disorder. It is complex and has a huge impact on the lives of those affected. Full recovery without treatment is rare. We still do not have a somatic explanation for the fatigue is lacking. Enhanced serotonin metabolism could play an important role in CFS. This study investigates the effect of reducing serotonin levels in patients with CFS.

### Who can participate?

Female CFS-patients between 18 and 40 years, fulfilling the US Center for Disease Control and Prevention criteria can participate. Exclusion criteria are: pregnancy, previous or current participation in CFS-research, use psychotropic medication (antidepressants, sleep medication) in the last month. Vegetarians and lactating women are excluded as well.

### What does the study involve?

The effect on fatigue severity, concentration and mood will be assessed. Serotonin levels can temporarily be reduced by taking an amino-acid drink without tryptophan. Tryptophan is a precursor of serotonin. There are two test-days, one week apart. On each test day patients will receive an amino acid drink. Patients will receive a dummy amino-acid drink and on the other test day patients will receive the real amino acid drink that will reduce serotonin levels. At the end of the study we will compare the effects of the real and the dummy drinks.

### What are the possible benefits and risks of participating?

The effect of lowering serotonin levels in CFS patients is under investigation. It is not clear whether there will be a positive effect. During the study blood sampling will take place. Bruising can occur. The amino acid mixtures have an unpleasant taste. Nausea can occur during and after drinking the mixtures.

Where is the study run from?

The study was set up by the Radboud University Nijmegen Medical Centre, Department of General Internal Medicine, Nijmegen Expert Centre Chronic Fatigue and Donders Institute for Brain, Cognition and Behaviour (Netherlands).

When is the study starting and how long is it expected to run for?

The study ran between June and December 2011.

Who is funding the study?

Funding was provided by Prof. dr. J.K. Buitelaar

Radboud University Nijmegen Medical Center Donders Institute for Brain, Cognition and Behavior

Dept of Cognitive Neuroscience

P.O. Box 9101 (204)

6500 HB Nijmegen

Who is the main contact?

Gerard The

gkh.the@gmail.com

## Contact information

### Type(s)

Scientific

### Contact name

Mr Gerard The

### Contact details

Glenn Millerlaan 10

Goes

Netherlands

4462LN

+31 11 842 52 45

gkh.the@gmail.com

## Additional identifiers

### Protocol serial number

N/A

## Study information

### Scientific Title

The effect of acute tryptophan depletion in chronic fatigue syndrome, a pilot study.

### Study objectives

There is clinical and experimental evidence implicating enhanced serotonin metabolism in chronic fatigue syndrome. It is hypothesised that reducing central serotonin levels is effective in chronic fatigue syndrome.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

Radboud University Nijmegen Medical Centre, 01/09/2005, ref: 2005/167

**Study design**

Placebo-controlled cross-over study

**Primary study design**

Interventional

**Study type(s)**

Treatment

**Health condition(s) or problem(s) studied**

Pathophysiology of chronic fatigue syndrome

**Interventions**

Acute Tryptophan Depletion (ATD) is a reliable and reversible challenge test for serotonin. It has widely used to investigate the role of serotonin in a variety of psychiatric disorders. ATD is a method that significantly reduces central serotonin in human subjects. ATD is a technique that uses a combination of low tryptophan diet and a tryptophan-deficient protein load containing large amounts of other large neutral amino acids to produce maximal brain tryptophan and serotonin depletion. Within a few hours serotonin depletion can be achieved. The effect of ATD on CFS-related symptoms, like fatigue, concentration and mood will be assessed.

Tryptophan and other amino acids levels will be assessed.

There are two test-days. On each test day baseline assessments (self-report questionnaires and blood sampling) will take place in the morning. Five hours after ingestion of the ATD mixture or the dummy mixture the assessments will be repeated. Each test day starts at 8.00 hrs and ends at 16:00 hrs.

**Intervention Type**

Other

**Phase**

Not Applicable

**Primary outcome(s)**

1. Fatigue severity
2. Concentration
3. Mood

**Key secondary outcome(s)**

No secondary outcome measures

**Completion date**

31/12/2011

# Eligibility

## Key inclusion criteria

1. Female CFS-patients, according to CDC criteria
2. Aged 18 - 40 years
3. Written informed consent

## Participant type(s)

Patient

## Healthy volunteers allowed

No

## Age group

Adult

## Lower age limit

18 years

## Sex

Female

## Key exclusion criteria

1. Nursing or pregnant women
2. Current psychiatric comorbidity
3. Vegetarians
4. Use of psychotropic drugs: current or previous month
5. Current or previous engagement in CFS research

## Date of first enrolment

01/06/2011

## Date of final enrolment

31/12/2011

# Locations

## Countries of recruitment

Netherlands

## Study participating centre

Glenn Millerlaan 10

Goes

Netherlands

4462LN

# Sponsor information

## Organisation

Radboud University Nijmegen Medical Center (Netherlands)

## ROR

<https://ror.org/05wg1m734>

## Funder(s)

### Funder type

University/education

### Funder Name

Radboud University Nijmegen Medical Center (Netherlands)

# 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?
<a href="#">Results article</a>	results	16/09/2014		Yes	No
<a href="#">Participant information sheet</a>	Participant information sheet	11/11/2025	11/11/2025	No	Yes