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Does oral N-acetyl-cysteine (NAC) improve schizophrenia symptoms?

Submission date
08/09/2009

Recruitment status
No longer recruiting

Registration date
14/10/2009

Overall study status
Completed

Last Edited
14/10/2009

Condition category
Mental and Behavioural Disorders

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

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific

Contact name
Dr Philippe Conus

Contact details
Département de Psychiatrie
Route de Cery
Prilly
Switzerland
1008
philippe.conus@chuv.ch

Additional identifiers

Protocol serial number
13/08

Study information

Scientific Title
Effects of oral N-acetyl-cysteine (NAC) in the early phase of schizophrenia spectrum psychosis: a randomised parallel double-blind placebo-controlled trial

Study objectives

N-acetyl-cysteine (NAC), a common antitussive drug, is able to modulate the response to oxidative stress in body tissues. The aim of the study is to evaluate the impact of oral administration of NAC in the early phase of schizophrenia, on clinical, psychopathological, neuropsychological, biochemical and neuro-physiological variables.

1. Symptomatology: does the oral administration of NAC have an impact on evolution of positive and negative symptoms, cognitive deficits?
2. Side effects of neuroleptic treatment: does the oral administration of NAC have an impact on the side effects of antipsychotic treatment?
3. Glutathione (GSH) level: does the oral administration of NAC increase the plasma and brain concentration of GSH and related compounds?
4. Mismatch negativity (MMN): does the oral administration of NAC have an impact on MMN, a pre-attentive component of electro-encephalograms found to be impaired in schizophrenic patients?

Ethics approval required
Old ethics approval format

Ethics approval(s)
The Faculty of Biology and Medicine - Ethics Commission of Clinical Research (Faculté de Biologie et de Médecine - Commission d'éthique de la recherche clinique) approved on the 10th July 2008 (ref: 13/08)

Study design
Randomised multicentre parallel double-blind placebo-controlled trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Early phase psychosis

Interventions
Each patient gets 2700 mg NAC or placebo per day during 24 weeks. Each patient gets the NAC pills/placebo each month for four weeks. After 24 weeks we stop the NAC/placebo and there is a follow-up after 4 weeks. Then we do the last clinical interviews and take urine and blood samples.

Intervention Type
Drug

Phase
Phase II

Drug/device/biological/vaccine name(s)
N-acetyl-cysteine (NAC)

Primary outcome(s)

Improvement of the negative symptoms, measured with the Positive and Negative Syndrome Scale (PANSS - score: 1 = absence of the symptom to 7 = extreme symptoms), measured at baseline, then every month for 7 months

Key secondary outcome(s))
1. Clinical outcome: decreased risk of relapse during the outcome period measured with the PANSS, GAF and SOFAS)
2. Neuropsychological outcome: improvement of cognition (measured with the global score of the "MATRICS" battery); and improvement of the working memory (measured with the "MATRICS" battery)
3. Functional electroencephalographic outcome: improvement of the MMN (or prevention /delay); change of the P3, response to visual stimuli
4. Magnetic resonance by spectroscopy (MRS): higher cerebral level of glutathione measured by MRS. Changes in connectivity measured by MRS and DSI, diffusion spectrum imaging. Measured at baseline (V1) and after 6 months.
5. Stratification: better response to treatment in sub-groups (high-risk/low risk GCLC genotype and/or anomalies in GSH system)

Completion date
30/11/2011

Eligibility

Key inclusion criteria
1. Capability to provide informed consent
2. Male or female aged 15 to 35 years with sufficient command of French language
3. Having met threshold criteria for psychosis as defined by the "Psychosis threshold" subscale of the Comprehensive Assessment of at Risk Mental States Scale (CAARMS). This threshold is based on a combination of intensity and duration of psychotic symptoms.

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Key exclusion criteria
1. Severe somatic comorbidities: peptic ulcer disease, chronic inflammatory pathologies, infectious pathologies including human immunodeficiency virus (HIV), pathologies of the immune system, organic cerebral diseases, tumours, abnormal renal, hepatic, thyroid or haematological findings
2. Previous cerebral trauma
3. Substance induced psychosis or organic psychosis
4. Mental retardation (intellectual quotient [IQ] less than 70 and alteration or significant

adaptation deficit). We will assess the IQ only in the case of necessity when we doubt about the intellectual skills of a patient.
5. NAC allergy
6. Treatment with antioxidants (vitamin E, selenium, multivitamins, etc.)
7. Insufficient command of French

Date of first enrolment
15/12/2008

Date of final enrolment
30/11/2011

Locations

Countries of recruitment
Switzerland

United States of America

Study participating centre
Département de Psychiatrie
Prilly
Switzerland
1008

Sponsor information

Organisation
Swiss National Science Foundation (Fonds National Suisse de la Recherche Scientifique [SNSF]) (Switzerland)

ROR
https://ror.org/00yjd3n13

Funder(s)

Funder type
Charity

Funder Name
Lausanne University Hospital, faculté de Biologie et de Médecine (CHUV) (Switzerland) - MTR Schizophrénie

Funder Name
Society of the French-Swiss Lottery (Loterie Romande) (Switzerland)

Funder Name
Swiss National Science Foundation (SNSF) (Switzerland)

Alternative Name(s)
Schweizerischer Nationalfonds, Swiss National Science Foundation, Fonds National Suisse de la Recherche Scientifique, Fondo Nazionale Svizzero per la Ricerca Scientifica, Fonds National Suisse, Fondo Nazionale Svizzero, Schweizerische Nationalfonds, The Swiss National Science Foundation (SNSF), SNF, SNSF, FNS

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
Switzerland

Funder Name
Stanley Thomas Johnson Foundation (Switzerland)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/08/2008		Yes	No
Results article	results	01/09/2008		Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes