HEALTH & BIOSECURITY
www.csiro.au

SAHMRI North Tce, Adelaide SA 5000
PO Box 10097, Adelaide SA 5000
T (08) 8305 0615 1800 850 036 • **ABN** 41 687 119 230

The effect of Ergothioneine on Cognition and Mood; a Randomized Controlled Trial

PARTICIPANT INFORMATION SHEET

HUMAN RESEARCH ETHICS COMMITTEE NUMBER: 2020_015_HREC

INTRODUCTION

Each year CSIRO performs a number of research projects involving human participants. In this study we are interested in looking at the effect of a synthetic form of Ergothioneine, a compound found naturally in mushrooms.

Like many countries, Australia has an ageing population in which cognitive decline is a growing issue. There is an emerging body of research to suggest that consuming mushrooms may be associated with good brain health. This is because it contains components like Ergothioneine, which is thought to act as an antioxidant and anti-inflammatory compound. Studies have already shown that Ergothioneine decreases with ageing and in people with impaired cognitive function. Research has also linked higher intake of mushrooms with a lower rate of dementia.

Our research team has performed a broad range of human clinical studies through our state-of-the-art Nutrition and Health Research Clinic located at the South Australian Health and Medical Research Institute (SAHMRI). This study is being funded by a commercial sponsor, Phyto Tech Corp (trading as Blue California).

WHAT IS THE AIM OF THIS STUDY?

The main objective of this study is to determine the effects of a synthetic form of Ergothioneine on cognitive function, including memory, in the general population.

Specifically, we will be looking at the benefit of daily consumption of Ergothioneine in people who report memory complaints and observing any benefit in cognition in these individuals. In addition to the cognitive benefits, we will also measure sleep quality, mood and changes in biochemical (blood) markers, including inflammation, ergothioneine levels and telomere length. Telomeres are regions of DNA that shorten naturally as we age. The rate at which shortening occurs may be associated with changes in cognitive function.

HOW WILL THE STUDY BE CARRIED OUT?

Who can participate?

Healthy men and women who are aged 55 to 79 years may be eligible to participate in this study. 150 individuals will participate in this clinical trial in Adelaide. You must meet certain selection criteria. These criteria along with other further criteria related to your health will be assessed for you during the screening process.

Key Eligibility Criteria:

1. Male and females aged 55-79 inclusive
2. Have concerns about memory loss
3. No evidence of symptoms consistent with Mild Cognitive Impairment or Dementia
4. No colour blindness
5. Aged between 55 years to 79 years of age
6. Body Mass Index ≥18.5 or ≤35 kg/m^2, inclusive (we can calculate this for you)
7. Have no aversion or intolerance to any of the following: Mushrooms, Microcrystalline cellulose, vegetarian capsules (Hypromellose, purified water, titanium dioxide, carrageenan, pectin), magnesium stearate, or silicon dioxide
8. No history of a head injury that required hospitalisation, brain surgery, transient ischemic attacks, stroke, coronary artery bypass surgery, other heart surgery or degenerative neurological disease
9. No history of Type 1 Diabetes
10. No history of smoking within the last 6 months
11. No history of an intellectual disability or other developmental disorder (eg. Language disorder, ADHD, Autism)
12. Not currently being treated by a doctor or health professional for a mental health condition
13. Willing to consume the study supplement daily for a period of 16 weeks
14. Consumes less than 400 mg/day of Caffeine on average over the four weeks preceding screening

What is going to happen and what tests will be done?

If you would like to take part, then please complete the recruitment application and caffeine intake form that was emailed to you with this Information sheet and return those to us by email, this should take around 10 minutes to complete.
If you are unsure or have any questions, do not hesitate to contact the clinic, either by phone 83038876 or email CRUstudies@csiro.au and we can assist.

Once we have your application one of the clinic staff will telephone you to ask some further questions which will take around 15 minutes. The telephone screen will involve undertaking a simple memory test consisting of 6 multiple choice questions as well as asking about your medical and surgical history.

Once you have been determined as eligible to continue with the screening process you will be invited to our research clinic for the in-person screening session. This initial appointment will take approximately 1.5 to 2 hours.

At this screening session you will:

- Have a chance to discuss the details of the study and you will be asked to sign a formal consent form.
- Have your vital signs taken, blood pressure heart rate, (temperature, respiratory rate and height and weight.
- Confirm details about your medical history, surgical history and medications
- Provide a finger-prick blood sample
- Complete a questionnaire that measures symptoms of depression
- Complete a cognition-based test with a member of our research staff which will be used to determine if you are eligible to take part in the study

If you are eligible to participate in the study after the screening appointment you will make an appointment that is suitable for you to return for your Baseline visit.

The baseline clinic assessment will take around 1.5-2 hrs hours. At this visit you will:

- have your vital signs (blood pressure, heart rate, temperature, respiratory rate) and weight checked.
- Be asked to report any changes to medications that have occurred since the screening visit.
- provide a fasting blood sample which will be taken by a trained nurse or phlebotomist
- complete a computer-based cognitive test with a trained research assistant
- complete a range of questionnaires about your psychological health, memory, and sleep quality after a light breakfast
- be randomised into one of three groups (25mg Ergothioneine per day, 10mg of Ergothioneine per day, or a placebo) of which neither you or we can determine which group you will be allocated to. You will be asked to consume one capsule of the product per day.
- be provided with 4 bottles of the supplement to last the 16 weeks of the study. You will be instructed on how to consume the supplement
- be asked to download our CSIRO Code +Pro app on your mobile phone to enter your daily intake of the supplement, we will discuss how to use this at your clinic visit. You will also be provided with a paper checklist to help you remember to have your supplement daily.

You will visit the clinic again at week-4 and then at week-16 completing most of the measures described above on each occasion. You will be required to return your first bottle of the product to us at week 4 and then at week 16 the final 3 bottles should be returned.

It is important to note that:

- Whether or not you decide to be involved with this study is entirely up to you and there will be no penalty if you choose not to participate
- You will be expected to consume the supplement product every day for 16 weeks
- You will be required to fast (not to eat or drink anything except water) overnight before your clinic visits
- A light breakfast will be provided during each CSIRO clinic session, you will not be offered caffeine during your time in the clinic due to the nature of the testing

Upon completion of all the clinic visits, you will be reimbursed to the total value of $240 to thank you for your time and any travel costs incurred by taking part in this research project.

WHAT ARE THE BENEFITS OF PARTICIPATING IN THE STUDY?

You may not benefit directly from participation in this study, but you will be providing a valuable contribution to the scientific knowledge in this field.

ARE THERE ANY RISKS INVOLVED?

Ergothioneine is a new dietary supplement not currently approved for use or available for purchase within Australia. Although it is recognised as generally safe for human consumption, it is possible that adverse events could occur.

There have been no known reported serious side effects associated with Ergothioneine, however, you should report your medical history and any medication use to research staff as there is a chance that the ingredients may interact with certain conditions and medications.

There may be some inconvenience caused in adhering to the study protocol by attending the clinic visits and consuming the study product.

There is a small risk of infection/blood clotting and or bruising following blood collection, however, this is minimised by having the blood samples collected by a trained phlebotomist/nurse and you will have ample opportunity for rest during each visit. Should anything with potential medical significance be noted in any of your tests or samples (including your cognitive tests, vital signs and blood tests) by the principal investigator or our trial medical doctor, a letter will be sent to your doctor. our general practitioner will decide if they would need you to book an appointment for consultation or you can follow up directly with your GP.

There may be some discomfort completing the cognitive assessment due to you feeling more nervous than usual. Trained Clinic staff will be there to ensure you are made to feel comfortable before completing tests and understand what is required for each of the tests performed. If you express any concern about the tests or your ability to perform well, every effort will be made to clarify the nature and purpose of the tests and to allay any uncertainty or tension. If you display signs of significant distress, at the discretion of the assessor, cognitive testing will cease.

All human research undertaken by the CSIRO must comply with the values, principles, governance, and review process specified in the *NH&MRC National Statement on Ethical Conduct in Human*

Research (2007). A copy of the National Statement can be found at https://nhmrc.gov.au/research-policy/ethics/national-statement-ethical-conduct-human-research

ALTERNATIVES TO PARTICIPATION

Participation in this research is voluntary and is not your only option. Given the nature of this research, you may wish to make a personal appointment to discuss the appropriateness of this research study for you with your usual GP or healthcare practitioner, who knows your medical history, prior to deciding whether or not to take part in this research project.

HOW WILL MY PRIVACY BE PROTECTED?

CSIRO is governed under the Privacy Act 1988 (Cth). CSIRO is collecting your personal information for the purposes of conducting the study and related scientific research. CSIRO will only use and disclose your personal information in accordance with the Privacy Act 1988 and the NH&MRC National Statement on Ethical Conduct in Human Research (2007, Updated 2018) as amended from time to time, and as otherwise required by law.

In relation to studies conducted by CSIRO, it is customary for all personal information to be identified by a code and stored at CSIRO under lock and key for a period of at least 15 years. Except where otherwise required by law or a government body, at the end of this period your records will be destroyed or permanently de-identified.

Where third parties are assisting CSIRO in relation to the conduct of this study (such as university staff, students and other health professionals), we may disclose your personal information to those third parties for this purpose on a confidential basis. CSIRO will require such third parties to keep this information confidential and to only use your personal information for the purposes of the study and otherwise in accordance with the Privacy Act 1988.

You and, with your permission, your doctor will be notified of any medical condition deemed significant by the Clinical Research Unit Medical Officer. We will not use or disclose your information for direct marketing purposes.

CSIRO may publish study results and data in research publications and press releases, however, CSIRO will de-identify any personal information contained in the data and results so that you cannot be identified.

The CSIRO Privacy Policy available at https://www.csiro.au/en/About/Access-to-information/Privacy outlines how your personal information will be handled, including details about how you can seek access or correction of the personal information we hold about you and how you can make a complaint about a breach of the APPs and how CSIRO will deal with the complaint. If you require further information on how your personal information will be handled please contact privacy@csiro.au.

WHAT IF I WISH TO WITHDRAW?

You are free to withdraw at any time during the study, without penalty. However, subject to any relevant legislation and depending on the date of publication, it may not be reasonable or practical to remove your information. Information collected up to the point of your withdrawal will be included in the analysis of the study, unless you request that they be withdrawn. Where you would like to withdraw your consent, please contact the clinic at crustudies@csiro.au

It is also important to understand that we may choose to end your participation. That decision may be made if we decided that the study is not in your best interest, if you are unable to follow the protocol of the study, or if the study is discontinued. If we must end your participation, we will make sure you are made aware of the reasons.

YOUR OBLIGATIONS AS A PARTICIPANT

You will need to inform a study staff member of any changes in your health status as some changes could influence your participation in the study and the study findings. You must also be able to attend all the clinic sessions and undertake all relevant procedures during the study period.

IF YOU HAVE FURTHER QUESTIONS

Please call the Nutrition Research Clinic on 83038876 or via email CRUstudies@csiro.au. Please mention that you are ringing regarding the Ergothioneine Study.

This study has been approved by the CSIRO Human Research Ethics Committee. If you would like to speak with someone with respect to ethical matters or wish to register a formal complaint about the conduct of this research, please contact the Secretary of the Committee via email at chmhrec@csiro.au or phone on (07) 3833 5693.

Print Name: .....

Signature: ..... Date: / /