INFORMATION SHEET

An examination into the effects of Lute-gen® on Macular Pigment Optical Density (MPOD) and cognitive performance in teenagers: a randomised, double-blind, placebo-controlled trial

Principal Investigator:	**Dr Adrian Lopresti**
Contact Person(s):	**Dr Adrian Lopresti and Dr Stephen Smith**
Address	**38 Arnisdale Rd, Duncraig WA 6023**
Telephone No.	**(08) 9448 7376**

Background

Lutein and zeaxanthin (LZ) are fat-soluble antioxidant nutrients that are part of the carotenoid family. Carotenoids appear yellow and are responsible for many of the colours found in plants and other foods. Lutein is found in dark green leafy vegetables like spinach and kale and in corn and egg yolks. Zeaxanthin is prominent in orange and yellow foods such as com, egg yolks, orange capsicums, persimmons, tangerines, mandarins, and oranges. In the body, LZ are found in the eye, brain, breast, and adipose (fat) tissue. In several studies, supplementation with LZ has been shown to positively affect eye health, memory and cognitive performance.

This study will be conducted by Dr Adrian Lopresti and Stephen Smith (Clinical Research Australia).

Information about the funding source and declaration of interests

This study is being funded by Bio-gen Extracts Pvt. Ltd, the company that manufactures the ingredients used in this study. However, this study is independently managed by Clinical Research Australia (CRA) without external influence from Bio-gen Extracts.

Aim of the study

We would like to know whether taking LZ capsules once daily for 6 months can improve eye health and cognition in teenagers aged 13 to 18 who regularly use computers and other electronic screens (herein referred to as the 'participant' or 'teen').

What does participation involve? **(see study flow chart on page 3)**

This study will comprise several steps as outlined below:

Step 1: Completion of initial online screening

This questionnaire consists of approximately 20 questions and takes approximately 5 to 10 minutes to complete. It provides us with information relating to the eligibility criteria. If, based on the results of the screening questionnaire, the participant is assessed as 'likely' eligible, you will be contacted for a phone interview. Ineligible volunteers will be informed by email that they do not fulfil the eligibility criteria.

Step 2: Phone Interview for an initial assessment of eligibility

If the participant/teen is potentially eligible to participate in the study, a phone interview will be conducted (approx. 10 minutes). The purpose of this interview is to obtain relevant background information (e.g., illnesses, medication use, current treatments, etc.), provide you with further details about the study and what the next step is in the qualification process, and assess other relevant eligibility criteria. If the participant meets our eligibility criteria, a face-to-face appointment at our office in Duncraig will be arranged for 3 to 14 days later.

Please note that it is recommended that the participant (teen) be involved in this interview, particularly if he/she is over 15 years old. If you are 18 years old, you must be involved in this interview.

Step 3: VISIT 1: Face-to-face assessment (approx. 90 mins)

During this meeting, the following tasks will be completed with the participant:

1. Measurement of your weight, height, and blood pressure
2. Completion of an eye test.
3. Complete several tasks assessing your memory and cognitive function.
4. Complete self-report questionnaires assessing your sleep and general wellbeing.
5. 3-month (12-week) provision of capsules to take for the study

Please note: On the day of the visit, it is important that you:

1. DO NOT drink any caffeinated beverage at least 3 hours before your appointment.
2. DO NOT engage in strenuous exercise on the day of your appointment.

Step 4: 12-week intake of capsules (LZ or placebo)

In this study, we will be using a randomised, double-blind, placebo-controlled design. This means that half of the participants will be placed on LZ capsules, and the other half will be placed on placebo (dummy) capsules. Neither you nor the investigator will know which group you have been placed in. This random placebo allocation is important for us to assess the true effects of LZ on eye health.

* Placebo involves providing a substance with no known treatment effects. In this case, the placebo will contain sunflower oil.

You will be required to take 1 capsule, once daily with food. It is extremely important that you take the capsule every day. We will send you daily reminders to take your capsules every day.

Step 5: Complete online questionnaires on days 30 and 60

Every 30 days, you and your legal guardian will be asked to complete online questionnaires that ask if you have been experiencing any side effects from your capsules, experienced any illnesses, or changed/started any new medications. In addition, you will need to complete some of the questionnaires completed during your first visit. These questionnaires will take approximately 10 minutes to complete.

Step 6: VISIT 2: Day 90, face-to-face assessment (approx. 45 mins)

During this visit, the following tasks will be completed:

1. Return of unused capsules/ pill bottles
2. Measurement of your weight and blood pressure
3. Eye test
4. Self-report questionnaires
5. 90-day provision of more capsules to take for the study

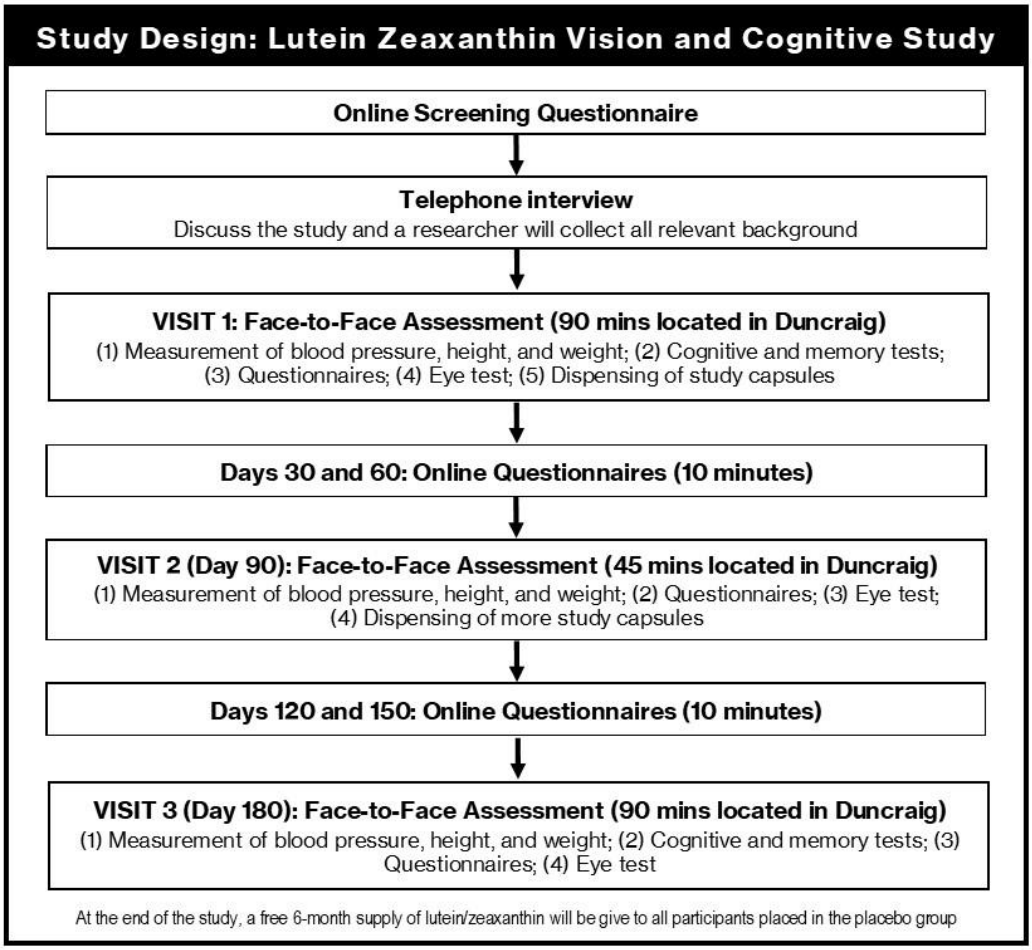
Step 7: Complete online questionnaires on days 120 and 150

Every 30 days, you and your legal guardian will be asked to complete online questionnaires that ask if you have been experiencing any side effects from your capsules, experienced any illnesses, or changed/started any new medications. In addition, you will need to complete some of the questionnaires completed during your first visit. These questionnaires will take approximately 10 minutes to complete.

Step 8: VISIT 3: Day 180, face-to-face assessment (approx. 90 mins)

During this visit, the following tasks will be completed:

1. Return of unused capsules/ pill bottles
2. Measurement of your weight and blood pressure
3. Eye test
4. Several tasks assessing your memory and cognitive function.
5. Self-report questionnaires



Compensation for participating in this study

1. To compensate you for your travel costs and time associated with participating in this study, at visits 1 and 2, we will give you a $40 Coles/Myer Group voucher and a $100 voucher on visit 3.
2. At the end of the study, all volunteers will be offered a free 6-month supply of lutein & zeaxanthin capsules.

Criteria for inclusion/ exclusion in this study

To be included in the study, the following inclusion criteria must be met for the participant/teen:

1. Aged 13 to 18 years old.
2. Eats a diet generally low in fruit and vegetables
3. Uses light emitting diode (LED) screens (e.g., televisions, computer screens, mobile/phones, tablets) for more than 4hrs a day
4. If attends school, must attend mainstream schooling and mainstream classes
5. Has no plan to commence a new treatment over the study period which might affect the treatment outcomes.
6. Is willing and able to swallow capsules
7. The teen and parent/legal guardian of the teen (if under 18 years) are willing to provide personally signed and dated informed consent indicating that they have been informed of all pertinent aspects of the trial.
8. Teen and parent/legal guardian of the teen (if under 18 years) are fluent in English

If any of the exclusion criteria below are met, you will not be suitable for participation in this study:

1. Is significantly over- or under-weight for his/her age
2. Has been diagnosed with a learning disability
3. Has a current or 12-month history of any significant psychiatric disorder (including ADHD)

4. Has a current or history of clinically significant chronic medical condition including cardiovascular disease, organic brain disorder, seizure, diabetes, or gastrointestinal disease
5. Is currently taking pharmaceutical medications that might affect the treatment outcomes.
6. Is regularly taking nutritional or herbal supplements that might affect the treatment outcomes.
7. Is experiencing exceptional social/family stressors (e.g., serious illness in the family, recent parental separation, etc).
8. Has plans for major lifestyle changes in the next 6 months.
9. Is a regular nicotine smoker or vaper
10. Currently (or in the last 12 months) has used illicit drugs
11. Consumes more than 14 standard drinks of alcohol a week
12. Is pregnant, breastfeeding, or intends to fall pregnant during the study period.
13. Has had a major surgery over the last year or has a planned major surgery during the study period
14. Has participated in any other clinical trial in the last month

Voluntary participation and withdrawal from the study

It is important that you understand that your involvement in this study is voluntary. While we are grateful to have you participate, we respect your right to decline. There will be no consequences to you if you decide not to participate, and this will not affect any future treatment/service. If you decide to discontinue participation at any time, you may do so without providing an explanation. If you withdraw, any assessments already conducted may continue to be used for analysis.

Please note that if you choose to commence a treatment to improve your cognitive performance or sleep or require treatment for any other condition during the study, this may result in withdrawal. Your health is the utmost priority, and your choice/need to commence a new treatment before completing this study is respected and supported.

Your privacy

Your privacy is very important to us. Your participation in this study and any information provided will be treated in a confidential manner. Your name and identifying details will not be used in any publication arising out of the research. Following the study, the data will be kept in a de-identified format, in a locked cabinet in the office of the Investigator and will be held for statistical analysis for future publication. Re-identifying codes will be retained for 6 months in case this is needed and will then be destroyed.

Possible benefits

Vision and memory problems are increasingly recognised as problems for young people. If LZ can effectively improve eye health and memory in teenagers, it will provide people with a natural treatment option.

Possible risks

LZ are considered safe and are well-tolerated by most users. It is a commonly-used supplement for eye health. In this study, we will be using a dose of 10mg of lutein and 2mg of zeaxanthin a day, which is the most common dose used in studies. No studies have reported any serious side effects from its intake, although this cannot be totally ruled out. In one large study lasting 5 years, the only side effect identified was some minor skin yellowing that was not considered harmful. Further details about lutein and zeaxanthin and their intake are included in the 'Lutein & Zeaxanthin Information Sheet'.

What to do if you experience significant side effects

If you experience any significant illness, injury, or side effects from taking your capsules, please contact Dr Adrian Lopresti or Dr Stephen Smith immediately (contact details are below). You may be asked to stop participating in the study and to seek medical advice.

Dr Stephen Smith: Ph: 9448 7376 | Mob: 0412 813 518 | Email: steve@clinicalresearch.com.au

Dr Adrian Lopresti: Ph: 9448 7376 | Mob: 0411 969 797 | Email: adrian@clinicalresearch.com.au

Feedback on study results

It is estimated that the results of this study will be finalised by late 2025. A summary of the results obtained from all participants in this study will be emailed to you when they have been published in a peer-reviewed journal.

Questions

If you would like to discuss any aspect of this study, please contact Dr Adrian Lopresti on 08 9448 7376.

We would like to thank you in advance for your assistance with this research project.

If you are interested in participating in this study, please contact Dr Adrian Lopresti on 9448 7376 or email adrian@clinicalresearch.com.au

This study has been approved by the National Institute of Integrative Medicine (NIIM) Human Research Ethics Committee (HREC) (Trial Reference Number: 0145E_2024). If you have any reservations or complaints about the ethical conduct of this research and wish to talk with an independent person, you may contact the NIIM Research Ethics Office (Tel. 03 9804 0646) or email hrec@niim.com.au). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.