

A Randomized Controlled Study to Assess the Efficacy of *Crocus Sativus* in Managing ‘Asthenopia’ Among Tech Hub Employees in Urban Region of Sangareddy District Through Asthenopia Symptom Scale

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ABSTRACT

The contemporary era is characterized by the ubiquitous presence of digital devices. Individuals across all age demographics, from paediatric to geriatric populations, exhibit substantial reliance on technology daily for almost everything. Asthenopia is a concern among young cohorts primarily due to prolonged exposure to the digital screens. Homeopathy offers extensive literature in treating various ocular complaints. The present study was undertaken to assess the therapeutic efficacy of *Crocus Sativus* in the management of Asthenopia.

KEY WORDS: *Crocus Sativus*, Asthenopia, Homeopathy, Tech hub Employees.

INTRODUCTION

Asthenopia is defined by the presence of at least one of ten symptoms—foreign body sensation, diplopia, blurred vision, eye swelling, dry eye, eye pain, difficulty in sustaining visual operations, decreased visual acuity, tearing, and photophobia—during close-up visual activities. Its reported prevalence ranges from 12.4%-32.2% in individuals under 18 to 57% in those under

30. This rising incidence is strongly correlated with the pervasive use of digital devices. Given its detrimental impact on concentration, performance, and productivity, asthenopia represents a significant public health concern, largely driven by increased reliance on digital technology for professional, academic, and social engagements.

Crocus sativus possesses diverse pharmacological properties, including antioxidant and anti-inflammatory effects, and enhances ocular blood flow, historically used in eye treatments. Despite its promising potential and inclusion in homeopathic therapeutic indexes for asthenopia, there is a notable lack of current research specifically on its efficacy for this condition. In Borieke Therapeutic index, under asthenopia, *Crocus* is given along with other remedies Nat-m., Ruta, Senega.

Indications of *Crocus sativa* include: - Eyes dry, humming as if after a cry. Asthenopia accompanied with severe photophobia. When reading, eyes get dry. Pupils swell and respond slowly. Eyes burn painfully after fading into darkness; must wink a lot and wipe as if a film were in front of the eyes. Eyes must be wiped as though they contained

water or mucus. Feeling as though she had been staring through extremely pointed glasses appears to be smoke in the eye. Feeling as though chilly air was shooting into the eye. Before eyes, there are electric sparks or jumping spots. Twitching of the eyelid above. Heavy lids.

AIM: To study the efficacy of *Crocus Sativus* in managing 'asthenopia' among tech hub employees.

OBJECTIVE: To determine the efficacy of *Crocus Sativus* in managing 'asthenopia' among tech hub employees through Asthenopia Symptom Scale.

HYPOTHESIS:

H_0 [Null]: *Crocus sativus* is not effective in the treatment of Asthenopia.

H_R [Research]: *Crocus sativus* is effective in the treatment of Asthenopia.

MATERIALS AND METHODS

Source of data: Study population will be collected from different urban areas of Sangareddy, MNR Educational institution, MNRHMC OPD and IPD, Medical Camps.

Type of study: Experimental Study

Study design: Randomized Controlled study

Study population: Sample size is of age group between 18 and 36 years of both genders are included in this study.

Sample Technique: Simple Random.

Sample size: 30 Sample

These Patients are randomly allocated into 2 experimental groups.

1. Group-A [Treatment Group]: Patients will be treated with CROCUS SATIVUS 30C.
2. Group-B [Control Group]: Patients will be treated with SAC LAC.

Selection criteria:

1) Inclusion criteria:

- The individuals aged between 18 and 36 years of both genders are included.
- Software Engineers who have routine exposure to screens with asthenopia symptoms are included in the study.

2) Exclusion criteria:

- The individuals aged below 18 years and above 36 years are excluded in the study.
- History of intraocular surgery and ocular trauma.
- Systemic conditions or diseases affecting accommodation and binocular vision including Hormonal or Metabolic diseases.
- Persons who are not willing to participate and not willing to give informed consent are excluded from the study.

Quality control: The drug for the study [*Crocus sativus*] was procured from GMP certified pharmaceutical companies approved by the IEC. The drug was stored according to the rules of Indian Homoeopathic Pharmacopeia.

Medicine used: *Crocus sativus* 30CH procured from Sharda Boiron Laboratories Ltd [SBL]. It is Homoeopathic pharmaceutical company's authentic Homoeopathic pharmaceutical outlet with Batch number respectively.

Method of Data Collection: Ethical Clearance was taken by Ethical Committee before starting the research. Participation in this study was voluntary; the detail of the study was explained to each patient and a written consent was taken before enrolling them for the study. A standard case Proforma was maintained for obtaining the patient's details and the same was used to record them. Confidentiality was maintained in regard to recorded details of the patients.

Plan of analysis:

The details of the study were explained to each patient and a written consent was taken before enrolling them for the study.



The participants were randomly assigned to either the treatment group or the control group.



The treatment group received *Crocus sativus* while the Control group received placebo.



The participants were monitored for changes in their symptoms.



The effectiveness of *Crocus Sativus* was evaluated based on the Changes observed in the treatment group compared to the control Group.

STATISTICAL ANALYSIS:

Unpaired “t - test” was used as analysis/statistical tool.

OBSERVATION AND RESULTS

Table 1: Distribution of cases according to Gender

| GENDER | NUMBER OF CASES | PERCENTAGE |
|--------|-----------------|------------|
| FEMALE | 16 | 53 |
| MALE | 14 | 47 |

Figure 1: Distribution of cases based on Gender.

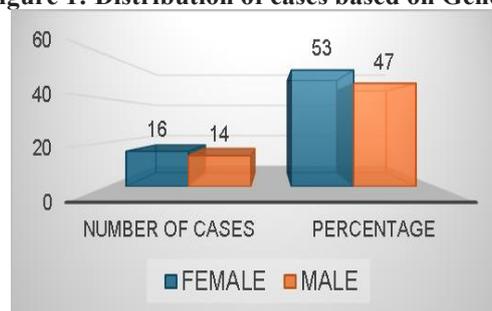


Table 2: Distribution of cases according to Age Group

| AGE GROUP | NUMBER OF CASES | PERCENTAGE |
|-----------|-----------------|------------|
| 18-23 | 01 | 3 |
| 24-29 | 13 | 44 |
| 30-36 | 16 | 53 |

Figure 2: Distribution of cases according to Age Group

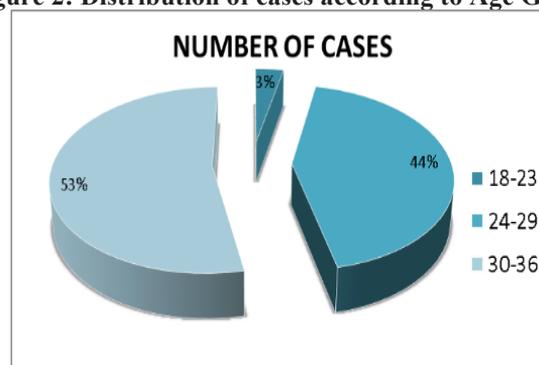


Table 3: Control group: Asthenopia Symptom score before and after treatment:

| S. No. | Case Number | Age | Gender | Before [B] | After [Af] |
|--------|-------------|-----|--------|------------|------------|
| 1 | 1 | 29 | Female | 35 | 33 |
| 2 | 2 | 26 | Male | 40 | 40 |
| 3 | 3 | 33 | Female | 23 | 23 |
| 4 | 4 | 31 | Female | 36 | 35 |
| 5 | 5 | 34 | Female | 50 | 50 |
| 6 | 6 | 28 | Male | 33 | 31 |
| 7 | 7 | 30 | Female | 42 | 40 |
| 8 | 8 | 26 | Male | 27 | 23 |
| 9 | 9 | 32 | Female | 35 | 35 |
| 10 | 10 | 34 | Male | 51 | 49 |
| 11 | 11 | 28 | Male | 32 | 31 |
| 12 | 12 | 32 | Female | 44 | 42 |
| 13 | 13 | 25 | Male | 24 | 23 |
| 14 | 14 | 31 | Female | 38 | 35 |
| 15 | 15 | 34 | Male | 49 | 48 |

Fig 3:

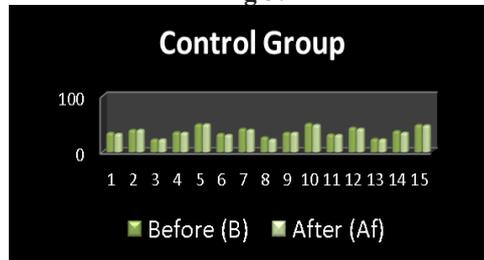


Table 4: Treatment Group: Asthenopia Symptom score before and after treatment:

| S. No. | Case Number | Age | Gender | Before [B] | After [Af] |
|--------|-------------|-----|--------|------------|------------|
| 1 | 1 | 28 | Male | 35 | 13 |
| 2 | 2 | 25 | Female | 41 | 20 |
| 3 | 3 | 32 | Male | 23 | 4 |
| 4 | 4 | 30 | Female | 36 | 13 |
| 5 | 5 | 35 | Male | 51 | 21 |
| 6 | 6 | 27 | Female | 42 | 16 |
| 7 | 7 | 24 | Male | 32 | 12 |
| 8 | 8 | 31 | Female | 50 | 28 |
| 9 | 9 | 33 | Male | 34 | 12 |
| 10 | 10 | 29 | Female | 44 | 22 |
| 11 | 11 | 23 | Female | 30 | 11 |
| 12 | 12 | 35 | Male | 46 | 24 |
| 13 | 13 | 29 | Female | 31 | 10 |
| 14 | 14 | 30 | Male | 53 | 32 |
| 15 | 15 | 26 | Female | 40 | 15 |

Fig 4: Treatment Group- Before & After Scores

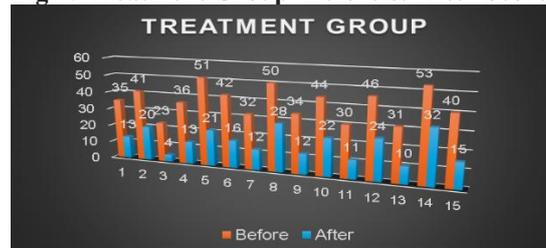
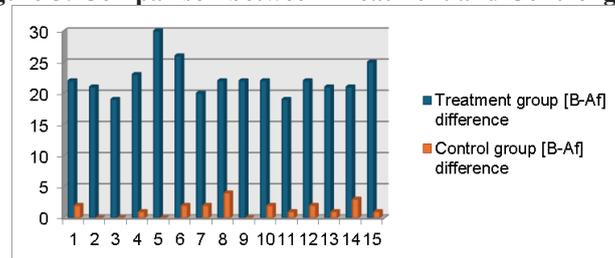


Table 5: Comparison between Treatment and Control group

| Case Number | Treatment group [B-Af] difference | Control group [B-Af] difference |
|-------------|-----------------------------------|---------------------------------|
| 1 | 22 | 02 |
| 2 | 21 | 00 |
| 3 | 19 | 00 |
| 4 | 23 | 01 |
| 5 | 30 | 00 |
| 6 | 26 | 02 |
| 7 | 20 | 02 |
| 8 | 22 | 04 |
| 9 | 22 | 00 |
| 10 | 22 | 02 |
| 11 | 19 | 01 |
| 12 | 22 | 03 |
| 13 | 21 | 01 |
| 14 | 21 | 03 |
| 15 | 25 | 01 |

Figure 5: Comparison between Treatment and Control group



STATISTICAL ANALYSIS:

Table 6: t-Test: Paired Two Sample for Means

| | Variable 1 | Variable 2 |
|------------------------------|------------|------------|
| Mean | 39.2 | 16.86667 |
| Variance | 74.88571 | 56.12381 |
| Observations | 15 | 15 |
| Pearson Correlation | 0.94798 | |
| Hypothesized Mean Difference | 1 | |
| df | 14 | |
| t Stat | 29.03953 | |
| P[T<=t] one-tail | 3.27E-14 | |
| t Critical one-tail | 1.76131 | |
| P[T<=t] two-tail | 6.53E-14 | |
| t Critical two-tail | 2.144787 | |

Table 7: t-Test: unpaired Two Sample for Means

| Group | Sample Size | Sample Mean |
|----------|-------------|-------------|
| Medicine | 15 | 23.7 |
| Control | 15 | 1.6 |

To ascertain the difference between the pre-treatment and post treatment observations of both the groups, unpaired-t test is applied with the total symptom score values obtained from the Asthenopia Symptom Scale before and after medicine. Calculated t- value is 4.85 and critical t value is 1.7 for 28 degrees

of freedom. Since the calculated value is 4.85 which is greater than the calculated 't'-value [$p < 0.05$]. Hence, null hypothesis is rejected and the alternative [Research] hypothesis is accepted. The significance value of the study i.e. [p value] was found to be less than 0.005,

which states that the study is statistically significant.

DISCUSSION

This 30-case study identified several significant factors associated with asthenopia. Females comprised 53% of cases, with the highest prevalence in the 30-36 age group (54%). Key behavioural and environmental factors strongly linked to asthenopia included insufficient sleep (50% of cases in those sleeping 5-6 hours), longer workdays (70% of cases working 7-10 hours), lack of regular breaks (70% of cases), and improper screen distance (80% of cases). Furthermore, asthenopia was common even with spectacle use (80% of cases), suggesting that factors like prolonged screen time or incorrect eyewear may still contribute. These findings collectively underscore the importance of addressing these modifiable risk factors in the prevention and management of asthenopia. This study demonstrated that the treatment group exhibited a significant reduction in asthenopia symptoms compared to the placebo control group ($t=4.85$, $p<0.005$)

CONCLUSION

This placebo-controlled study involving 30 tech hub workers demonstrated the statistically significant efficacy of *Crocus Sativus* 30C in reducing asthenopia symptoms compared to placebo ($p<0.005$). The research further identified key contributing factors to asthenopia, including female predominance, older age (30-36 years), insufficient sleep, prolonged working hours, lack of breaks, and improper screen distance, with symptoms persisting even among spectacle wearers. Conclusively, *Crocus Sativus* 30C presents an effective, safe, non-invasive, and affordable homeopathic treatment option for Asthenopia, highlighting the importance of addressing both pharmacological and lifestyle factors in managing this prevalent digital-age condition.

Declaration by Authors

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Conflict of Interest: No conflicts of interest declared.

REFERENCES

1. Hashemi H, Saatchi M, Yekta A, Ali B, Ostadimoghaddam H, Nabovati P, Aghamirsalim M, Khabazkhoob M. High Prevalence of Asthenopia among a Population of University Students. *J Ophthalmic Vis Res.* 2019 Oct 24;14[4]:474-482. Doi: 10.18502/jovr.v14i4.5455. PMID: 31875103; PMCID: PMC6825687. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6825687/>
2. Wiggins NP, Daum KM. Visual discomfort and astigmatic refractive errors in VDT use. *Journal of the American Optometric Association.* 1991 Sep 1;62[9]:680-4. Available from: <https://europepmc.org/article/med/1815002><https://pubmed.ncbi.nlm.nih.gov/1815002/>
3. Mocci F, Serra A, Corrias GA. Psychological factors and visual fatigue in working with video display terminals. *Occup Environ Med.* 2001 Apr;58[4]:267-71. Doi: 10.1136/oem.58.4.267. PMID: 11245744; PMCID: PMC1740121. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1740121/>
4. Abdi S, Rydberg A. Asthenopia in schoolchildren, orthoptic and ophthalmological findings and treatment. *Documenta ophthalmologica.* 2005 Sep; 111:65-72. Available from: <https://link.springer.com/article/10.1007/s10633-005-4722-4>
5. Lancaster WB. Three cases of asthenopia treated by psychotherapy. *American Journal of Ophthalmology.* 1923 Mar 1;6[3]:216-20. Available from: <https://www.sciencedirect.com/science/article/pii/S0002939423902357>
6. Schroyens Frederik, *Augmented Clinical Synthesis*; Edition 9.1: August 2016; B. Jain publishers PVT LTD ;2016.
7. Boericke, W., M.D.; *New Manual of Homoeopathic Materia Medica* with

- Repertory; Third Edition; B. Jain publishers; 2007.
8. Clarke, J.H, M.D.; A Dictionary of Practical Materia Medica; Volume-1; 1st Edition; B. Jain publishers; 2005.
 9. Srivastava R, Ahmed H, Dixit RK, Dharamveer, Saraf SA. *Crocus sativus* L.: A comprehensive review. *Pharmacogn Rev.* 2010 Jul;4[8]:200-8. Doi: 10.4103/0973-7847.70919. PMID: 22228962; PMCID: PMC3249922. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3249922/>
 10. Homoeopathic Pharmacopoeia of India, Volume2, 1971, Government of India, Ministry Of health, New Delhi.
 11. ToumaSawaya RI, El Meski N, Saba JB, Lahoud C, Saab L, Haouili M, Shatila M, Aidibe Z, Musharrafiieh U. Asthenopia Among University Students: The Eye of the Digital Generation. *J Family Med Prim Care.* 2020 Aug 25;9[8]:3921-3932. Doi: 10.4103/jfmprc.jfmprc_340_20. PMID: 33110788; PMCID: PMC7586504. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7586504/>
 12. Tiwari RR, Saha A, Parikh JR. Asthenopia [eyestrain] in working children of gem-polishing industries. *Toxicology and industrial health.* 2011 Apr;27[3]:243-7. Available from: <https://pubmed.ncbi.nlm.nih.gov/20940266/>
 13. Alamri, Abdulrahman1; Amer, Khaled A.2.; Aldosari, Abdulrahman A.2; Althubait, Basel M. S.2; Alqahtani, Mushary S.2; AL Mudawi, Abdulrahman A. M.2; AL Mudawi, Bandar A. M.2; Alqahtani, Faisal A. M.2; Alhamoud, Nawaf S. Y.2. Computer vision syndrome: Symptoms, risk factors, and practices. *Journal of Family Medicine and Primary Care* 11[9]:p 5110-5115, September 2022. | DOI: 10.4103/jfmprc.jfmprc_1627_21 Available from: https://journals.lww.com/jfmprc/fulltext/2022/09000/computer_vision_syndrome__symptoms,_risk_factors,.26.aspx
 14. Rios JL, Recio MC, Giner RM, Manes S. An update review of Saffron and its active constituents. *Phytotherapy Research.* 1996 May;10[3]:189-93. Available from: [https://onlinelibrary.wiley.com/doi/abs/10.1002/\[SICI\]1099-1573\[199605\]10:3%3C189::AID-PTR754%3E3.0.CO;2-C](https://onlinelibrary.wiley.com/doi/abs/10.1002/[SICI]1099-1573[199605]10:3%3C189::AID-PTR754%3E3.0.CO;2-C)

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