

THE SCIENCE OF PSEUDOSCIENCE IN EYECARE



Presented by:
 JOSEPH J. ALLEN, OD, FFAO, DIPL ABO

Doctor Eye Health

The Doctor Eye Health Podcast



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Disclosures

6/6 - Independent contractor Alcon - Independent Contractor, Speaker Allergan - Advisory Board Amazon - Independent contractor ASPEX - Independent Contractor ASUS - Independent Contractor Avellino - Independent Contractor Axon Optics - Independent Contractor BMC - Advisory Board, Independent Contractor DryEyeRescue - Independent Contractor Engage Tech - Consultant, Stock Options EyeEco - Independent Contractor, EyeLove - Independent Contractor, FluoreSCENE Media - Independent Contractor GamerAdvantage - Advisory Board, Independent Contractor Google - Royalties Glaukos - Independent Contractor Maculogix - Independent Contractor MacuHealth - Independent Contractor	Meta - Royalties MYZE - Advisory Board, Independent Contractor, Shareholder Nanodropper - Independent Contractor, Shareholder OmegaQuant - Independent Contractor OmniActive - Consultant, Independent Contractor Performance Vision Technologies - Independent Contractor Randolph Engineering - Independent Contractor STAAR Surgical - Independent Contractor TCL - Independent Contractor Tarsus - Independent Contractor Tear Restore - Advisory Board, Independent Contractor, Previous Shareholder TheraTears - Independent Contractor ThinOptics - Independent Contractor Weave - Independent Contractor Zenni Optical - Independent Contractor
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All Relevant Relationships Have Been Mitigated

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Goals/ learning objectives

- Learn to identify and understand common eyecare misinformation trends on social media,
 - including breast milk as eye drops, castor oil, Methylene Blue eye drops, N-Acetylcarnosine eye drops, sun gazing, sunglasses myths, urine drops, etc.
- Review marketing claims and strategies promoting eyecare misinformation, evaluate the scientific evidence, and assess the potential risks to eye health associated with these trends.
- Learn best practices for communicating with patients about misinformation trends, including building trust, active listening, showing empathy, and providing reliable, evidence-based information to guide patients towards safe treatments.

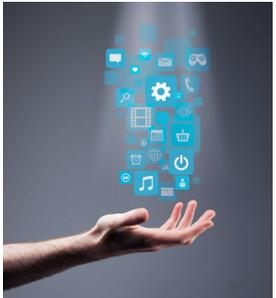
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HOW MISINFORMATION IS USED AND SPREAD

Spread of false information influenced by:
 - credibility, narrative, and context

Factors Driving Misinformation Spread:
 Micro-level: Cognitive biases, prior beliefs, perceived source trustworthiness.
 Macro-level: Social media network structures, polarization, and cascade effects.

Credibility and Media:
 Complicated by lack of accountability and fact-checking.



Al Hassan S, Bou Ghannam A, S Saade J. Ophthalmol Ther. 2024 Apr;13(4):895-902.

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ROLE OF INFLUENCERS, VIRAL POSTS, AND MISLEADING ADVERTISEMENTS



People are driven by social and economic factors

- Attention and Validation
- Social Connection and Belonging
- Self-Expression and Identity
- Economic and Career Opportunities
- FOMO and Cultural Relevance
- Altruism and Influence

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ROLE OF INFLUENCERS, VIRAL POSTS, AND MISLEADING ADVERTISEMENTS

Some posts are strategic disinformation for profit; others are misinformation, unknowingly amplified by social sharing."

- Not all misinformation is malicious—some is marketing, some is momentum.

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HOW TO EXAMINE AND DETECT MARKETING TACTICS BEHIND MISINFORMATION

Follow the Money

- Look for affiliate links, product mentions, or sponsored content tied to the claim

Check for Emotional Manipulation

- Misinformation often uses fear, outrage, or hope to override rational thinking.
- Look for emotionally charged language like **"shocking"**, **"miracle cure"**, **"what doctors don't want you to know"**

Spot Cherry-Picked "Science"

- Posts may reference isolated studies, outdated data, or animal trials out of context.
- Ask: Is this peer-reviewed? Are multiple studies in agreement?



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Note: All following examples are PARODY of real/existing posts found on social media.

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BREAST MILK EYE DROPS




Parody – not real advice

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BREAST MILK EYE DROPS

What you may find or hear...

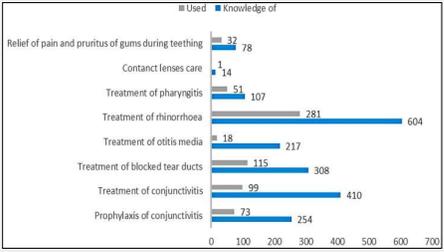
- Treatment for Conjunctivitis
- Prophylaxis of Conjunctivitis
- Treatment for Nasal Lacrimal Duct Obstruction





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2019 study that polled 1187 women from Poland about breast milk



Condition	Used	Knowledge of
Relief of pain and pruritus of gums during teething	32	78
Contact lenses care	1	14
Treatment of pharyngitis	51	107
Treatment of rhinorrhoea	281	604
Treatment of otitis media	18	217
Treatment of blocked tear ducts	115	308
Treatment of conjunctivitis	99	410
Prophylaxis of conjunctivitis	73	254

Karcz K, Walkowiak M, Makuch J, Olejnik I, Królak-Olejnik B. Non-Nutritional Use of Human Milk Part 1: A Survey of the Use of Breast Milk as a Therapy for Mucosal Infections of Various Types in Poland. *Int J Environ Res Public Health*. 2019 May 16;16(10):1715.

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REASONING??

Breast Milk Contains

- immunoglobulin A
- lactoferrin
- lysozyme
- oligosaccharides
- macrophages and lymphocytes
- protease inhibitors
- complement
- oligosaccharides,
- trace elements (copper, zinc, barium, iron, cobalt, manganese, cesium, etc.)
- hormones



Boudry G. *Front Nutr*. 2021 Mar 22;8:629740.
Jenness R. The composition of human milk. *Semin Perinatol*. 1979 Jul;3(3):225-39. PMID: 392766.

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RESEARCH TO SUPPORT IT

J Educ Health Promot. 2014 Jun 23;3:63. doi: 10.4103/2277-2531.134726 ©

Evaluation of preventive effects of colostrum against neonatal conjunctivitis: A randomized clinical trial

Sadiqibeh Ghamsi^{1,2*}, Faysa Nawazi¹, Shima Rahimzad¹, Mohaddeseh Bichahi¹, Roya Kefkeshadi¹

* Author information • Article notes • Copyright and License information
PMCID: PMC4114063 PMID: 25077156

	Conjunctivitis		Total
	No	Yes	
Colostrum	68	21	89
Topical antibiotic	69	13	82
Control	65	32	97
Total	202	66	268

P=0.038

Ghaemi S, et al. J Educ Health Promot. 2014 Jun 23;3:63.

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RESEARCH TO SUPPORT IT

Br J Ophthalmol. 2013 Mar;97(3):377-9. doi: 10.1136/bjophthalmol-2012-302033
Epub 2012 Dec 25.

Antibacterial effect of human milk for common causes of paediatric conjunctivitis

Justin T L Baynham, M Allison Moorman, Catherine Donnellan, Vicky Cevallos, Jeremy D Keenan
PMID: 23296679 DOI: 10.1136/bjophthalmol-2012-302033



Growth of

- *Neisseria gonorrhoeae*
- *Moraxella catarrhalis*
- *M viridans*

significantly inhibited ($p \leq 0.01$) by human milk samples

Baynham JT, et al. Br J Ophthalmol. 2013 Mar;97(3):377-9.

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RESEARCH TO SUPPORT IT

J Trop Pediatr. 2007 Feb;53(1):68-9. doi: 10.1093/tropj/fm063. Epub 2006 Dec 6.

Switch from antibiotic eye drops to instillation of mother's milk drops as a treatment of infant epiphora

Sergio Verd
PMID: 17151086 DOI: 10.1093/tropj/fm063



Treatment with local antibiotics took a significantly higher time than that in the mothers milk group (5 days VS 1 day)

Questionable methods and small sample size

Verd S, et al. J Trop Pediatr. 2007 Feb;53(1):68-9.

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PRE-CLINICAL STUDIES

- 2016 study found human milk prevented BAK-induced loss of corneal epithelial thickness and epithelial damage in a mouse model
- 2017 comparative study found faster corneal epithelial healing in mouse model than artificial tears or autologous serum
- 2024 study showed improved healing, cellular proliferation, and upregulation of the limbal stem cell gene transcripts



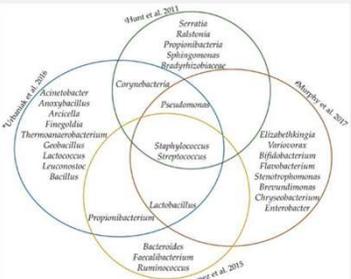
Diego JL, et al. Mol Vis. 2016 Sep 9;22:1095-1102
Asona L, et al. Curr Eye Res. 2017 Apr;42(4):506-512.
Pimple SN, et al. Curr Eye Res. 2024 Nov;49(11):1138-1144.

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CONCERNS

Breast Milk is NOT Sterile

breastmilk could be more harmful than helpful



Ojo-Okunola A, Nicol M, du Toit E. Human Breast Milk Bacteriome in Health and Disease. Nutrients. 2018 Nov 3;10(11):1643.

Afolabi OA, et al. Trop Geogr Med. 1985 Sep;37(3):245-9.

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CONCERNS

Infectious Agent	Transmission via Breast Milk	Breastfeeding Recommendation
HSV	Confirmed	Contraindicated unless no safe alternatives exist
HTLV-III	Confirmed	Avoid or limit duration: therapy reduces risk
CMV	Confirmed (risk to preterm)	Allowed in full-term; caution with preterm infants
Hepatitis B (HBV)	Low risk	Safe if infant received HBIG + vaccination
Hepatitis C (HCV)	Unlikely	Breastfeeding allowed
West Nile Virus	Extremely rare	Breastfeeding allowed
Staphylococcus aureus / MRSA	Yes (documented cases)	Allowed with precautions; avoid if breast is infected
Group B Streptococcus (GBS)	Possible	Allowed; monitor infant
Group A Streptococcus (GAS)	Rare	Pause during severe maternal infection
Listeria monocytogenes	Not documented	Breastfeeding allowed
Brucella melitensis	Rare (1 case documented)	Pause temporarily; resume after treatment
Gonorrhea (N. gonorrhoeae)	Not transmitted	Resume after 24 hrs of therapy
Chlamydia trachomatis	Not transmitted	Breastfeeding allowed
Diphtheria (C. diphtheriae)	Not via milk (skin risk only)	Avoid if breast skin involved
Haemophilus influenzae (HB)	Not transmitted	Breastfeeding may be protective
Tuberculosis (TB)	Not via milk (local lesion risk)	Avoid if breast lesions present
Antibiotic (B. anthracis)	Not transmitted	Breastfeeding allowed if mother is well
Infant Botulism	Not transmitted	Breastfeeding may be protective
Coagulase-negative Staph	Possible in NICU	Allowed; caution with preterm/NICU infants
Staph Toxin Syndromes (TSS)	Toxin risk; not milk-borne	Allowed if mother is improving and not severely ill

Lawrence RM. Breastfeeding. 2011:406-73. doi: 10.1016/B978-1-4377-0788-5.10013-6.

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CONCERNS

Reported cases of infection and even endophthalmitis and panophthalmitis

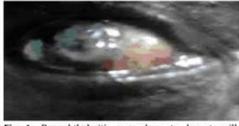


Fig 1. Panophthalmitis secondary to breast milk application

Table 1. Showing demographic data and ocular complications

Patients	Sex	Age	Diagnosis	Complications
Case 1	Female	14 months	Conjunctivitis	Panophthalmitis
Case 2	Female	35 yrs	Trauma	Panophthalmitis
Case 3	Male	2 yrs	Conjunctivitis	Endophthalmitis
Case 4	Female	2.5 yrs	Trauma	Endophthalmitis, phthisis bulbi
Case 5	Male	3 months	Bacterial conjunctivitis	None

CU Ukponmwan, et al. Nigerian Journal of Ophthalmology. Vol. 17 No. 1 (2009)

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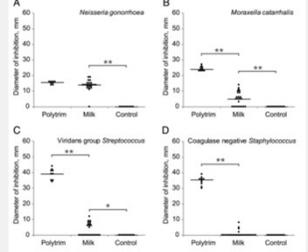
CONCERNS

70% of cases of paediatric conjunctivitis are bacteria

- H influenzae
- Streptococcus pneumoni
- M catarrhalis

• human milk NOT found to be effective against these bacteria

• unlikely to be effective against most of the common causes of bacterial conjunctivitis



Baynham JT, et al. Br J Ophthalmol. 2013 Mar;97(3):377-9.

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URINE EYE DROPS

Parody – not real advice



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URINE EYE DROPS

What you may find or hear...

- Treatment for Conjunctivitis
- Treatment for Dry Eye Syndrome
- Treatment for Cataracts



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URINE EYE DROPS

Normal Constituents of Urine

- Water (~95%)
- Electrolytes: Sodium, Potassium, Chloride, Calcium, Magnesium, Phosphates, Sulfates
- Nitrogenous Wastes: Urea, Creatinine, Ammonia, Uric Acid
- Organic Acids/Bases: Hippuric, Oxalic, Citric acids
- Vitamins: Water-soluble (e.g., B-complex, C)
- Hormones: Trace (e.g., hCG, cortisol metabolites)

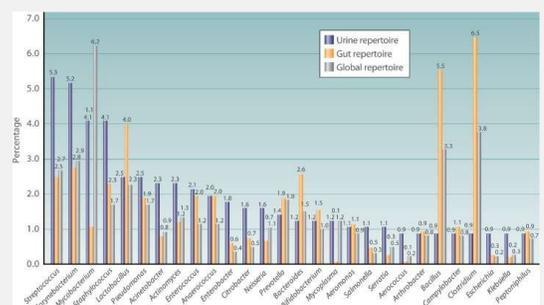
- pH: Normal 4.5-8.0 (usually 5.5 to 6.5)

- Microorganisms: Bacteria, yeast, parasites



Queremel Milani DA, Jialal I. Urinalysis. [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-.

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Morand A, et al. J Clin Microbiol. 2019 Feb 27;57(3):e00675-18.

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CONCERNS

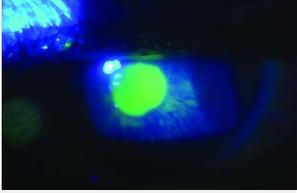
• J Clin Diagn Res. 2017 Apr;11(14):ND03-ND04. doi: 10.7890/JCDR.2017.11.14.973819

Cow Urine Keratopathy: A Case Report

Sumeet Khatwalia^{1,2*}, Prachi Jain³, Sumit Sachdeva³, Jitender Phoged⁴

* Author information • Article notes • Copyright and License information
PMCID: PMC5449825 PMID: 28271132

The corneal injury could have been caused by one of the three elements:
 1) The cow urine formulation
 2) "Surma powder"
 3) the metal rod applicator



Ammonia gas when dissolved in water forms an alkali ammonium hydroxide
 • leads to saponification and damage the corneal epithelium.

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CONCERNS



2018 Case Report

- Toxic / chemical reaction to urine content
- Risk of super bacterial infection

Fadamiro, Christianah Olufunmilayo. Bilateral Irreversible Blindness Following Urine Therapy to the Eyes. Pak J Ophthalmol 2018, Vol. 34, No. 2

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CASTOR OIL EYE DROPS

Parody – not real advice

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CASTOR OIL EYE DROPS

What you may find or hear...

- Reversing under eye bags
- Growing eyelashes
- Treating dry eye syndrome
- Treating Demodex
- Curing eye floaters
- Reversing and preventing cataracts



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CASTOR OIL EYE DROPS

What is Castor Oil?

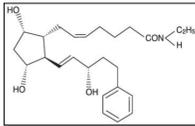
- Derived from the Ricinus communis plant (castor bean plant)
- Commonly used in cosmetics and skincare as an emollient
- Rich in fatty acids that support hair growth and reduce hair loss (maybe)
- Easily penetrates human skin, making it effective in topical applications
- Known for multiple therapeutic properties:
 - Antibacterial
 - Anti-inflammatory
 - Analgesic (pain-relieving)
 - Antioxidant
 - Wound-healing
 - Vasoconstrictor (tightens blood vessels)
- Considered safe and well-tolerated for most individuals



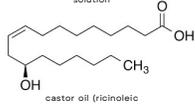
Sandford EC, et al. Clin Exp Optom. 2021 Apr;104(3):315-322.
 Chudzicka-Strugala I, et al. J Clin Med. 2023 Feb 19;12(4):1649.

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CASTOR OIL



bimatoprost ophthalmic solution



castor oil (ricinoleic acid)



- similar structure as prostaglandins (E2, D2, F2alpha)
- found to inhibit prostaglandin D2 synthase
- may aid in treatment for hair loss (alopecia)
 - However (No clinical studies found)

Sandford EC, et al. Clin Exp Optom. 2021 Apr;104(3):315-322.
 Latisse [package insert]. 2012 Allergan, Inc. Irvine, CA 92612

30

Randomized Controlled Trial | Ocul Surf. 2021 Jan;19(1):145-150. doi: 10.1016/j.joc.2020.05.007. Epub 2020 May 15.

Randomized trial of topical periocular castor oil treatment for blepharitis

Alex Muntz ¹, Emma Sandford ², Maria Classen ³, Lauren Card ³, Alice K Jackson ⁴, Grant Watters ⁵, Michael T M Wang ⁶, Jennifer P Craig ⁶

A 100% cold pressed castor oil formulation was applied to the eyelids of one eye BID for 4 weeks



Clinical improvements in (all $p < 0.01$)

- eyelid margin thickening
- telangiectasia
- eyelash matting
- madarosis
- cylindrical dandruff
- lid wiper epitheliopathy

Muntz A, et al. Ocul Surf. 2021 Jan;19:145-150.

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Clinical Trial | Ophthalmology. 2002 Nov;109(11):2030-5. doi: 10.1016/s0161-6420(02)01262-9.

Low-concentration homogenized castor oil eye drops for noninflamed obstructive meibomian gland dysfunction

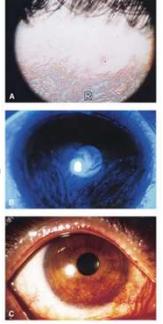
Eiki Goto ¹, Jun Shimazaki, Yu Monden, Yoji Takano, Yukiko Yagi, Shigeto Shimmura, Kazuo Tsubota

2% castor oil
5% polyoxyethylene castor oil (emulsifier)



Reported significant improvements in

- Symptom scores
- tear interference grade
- tear evaporation test results
- rose bengal scores
- TBUT
- orifice obstruction scores



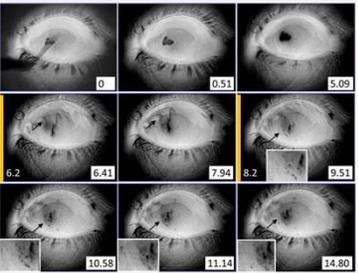
Goto E, et al. Ophthalmology. 2002 Nov;109(11):2030-5.

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CONCERNS

100% Castor Oil on the Eye??

- Poor spreading on ocular surface
- castor oil exerts cytotoxic effects on conjunctival cells.
 - could explain the side effects observed in some patients using eye drops containing castor oil as a vehicle



Kokkinakis J, et al. Cornea. 2023 Dec 1;42(12):1562-1571.
Toihiri Said, et al. Invest. Ophthalmol. Vis. Sci. 2007;48(11):5000-5006.

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CONCERNS

Castor Oil

- Minimal regulation
- Preservatives
- Contaminates
- Acidity levels (pH)
- Oxidation over time (light exposure)



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CASTOR OIL EYE DROPS

But what about...

- Eye Bags???
- Eye Floaters???
- Cataracts???

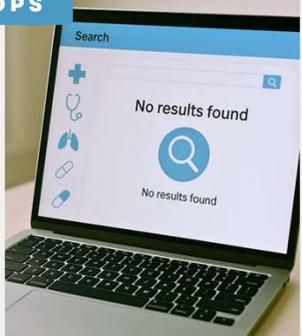
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CASTOR OIL EYE DROPS

But what about...

- Eye Bags???
- Eye Floaters???
- Cataracts???

Questionable if it would be able to pass into ocular tissues



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METHYLENE BLUE EYE DROPS



Parody – not real advice

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METHYLENE BLUE EYE DROPS

What you may find or hear...

- Improving eyesight
- Whiter "healthier" looking eyes
- Treating dry eye
- Curing Eye floaters
- Reversing and preventing Cataracts
- Treating glaucoma
- Treating AMD
- Opening up "third eye"



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METHYLENE BLUE EYE DROPS

What is it?

Synthetic dye

- FDA approved to treat methemoglobinemia, where hemoglobin can't carry oxygen effectively.
 - MOA:
 - Restores hemoglobin's function by reducing Fe³⁺ to Fe²⁺.
 - Inhibits nitric oxide pathways
- In malaria,
 - improves chlorequine drug efficacy.




Ginimuge PR, et al. J Anaesthesiol Clin Pharmacol. 2010 Oct;26(4):517-20
Bistas E, Sanghavi DK. Methylene Blue. [Updated 2023 Jun 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-

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Cells. 2021 Dec 1;10(12):3379. doi: 10.3390/cells10123379

The Potentials of Methylene Blue as an Anti-Aging Drug

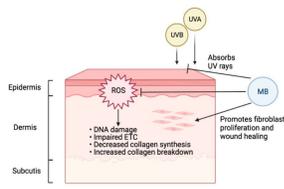
Huijue Xue¹, Abhirami Thavalappil¹, Kan Cao^{1,2}
Editors: Holger Bierhoff¹, Christoph Engert¹

Neuroprotection & Memory:

- enhances brain energy metabolism
- investigated for
 - Alzheimer's and Parkinson's.

Skin Aging:

- outperformed vitamin C and retinol
- promoting fibroblast proliferation
- collagen production
- reversing age-related skin changes



Info and Photo Credit: Xue H, Thavalappil A, Cao K. The Potentials of Methylene Blue as an Anti-Aging Drug. Cells. 2021 Dec 1;10(12):3379.

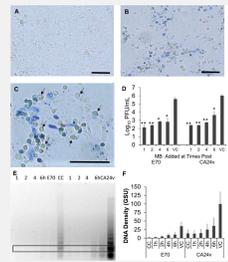
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RESEARCH TO SUPPORT IT

Clin Ophthalmol. 2020 Dec 23;14:4483-4492. doi: 10.2147/OPTH.S275762. eCollection 2020.

Methylene Blue Inhibits Acute Hemorrhagic Conjunctivitis Virus Production and Induction of Caspase-3 Mediated Human Corneal Cell Cytopathy

Marlyn P Langford¹, Alexandra R Sebnik¹, Maxwell A Burch¹, Thomas B Reders¹



- Results suggest MB treatment prior to and shortly after infection can inhibit AHC virus production.
- May have therapeutic potential against **Acute Hemorrhagic Conjunctivitis**

Info and photo credit: Langford Mpet al. Clin Ophthalmol. 2020 Dec 23;14:4483-4492.

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CONCERNS

Adverse Reactions (Long-Term):

- Prolonged daily use (4 months to 8 years) of over-the-counter MB-containing eye drops has been associated with adverse ocular effects, including irritation and toxicity.

Staining Effects:

- MB stains conjunctival and corneal epithelial cells, which is helpful diagnostically but may cause temporary blue discoloration of the eye.

Intraocular Use Warning:

- Intraocular administration of MB is strongly discouraged due to toxicity to iris epithelium and corneal endothelial cells.



Marchenko NR, et al. Vestn Oftalmol. 2016;132(5):81-85. Russian.
Brownstein S, et al. Can J Ophthalmol. 1989 Dec;24(7):317-24.
Brouzas D, et al. Cornea. 2006 May;25(4):470-1.

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SUNGAZING

Parody – not real advice



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SUNGAZING

What you may find or hear...

- Improve eyesight
- Prevent myopia
- Resets hormones
- Resets circadian rhythm

gaze at the sun for 5-10 s during the initial and final 15 min of daylight



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SUNGAZING

Also frequently reported in cases of

- religious practices and ceremonies
- illicit drug use (LSD, MDMA)
- schizophrenia and Tourette's syndrome



Hope-Ross M, et al. Br J Ophthalmol. 1988 Dec;72(12):931-4
 Gerbaldo H, et al. Am J Psychiatry. 1991 May;148(5):693. doi: 10.1176/ajp.148.5.693a.
 Demirtaş AA, et al. Photodiagnosis Photodyn Ther. 2021 Sep;35:102359.

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SUNGAZING

Improve eyesights???

- "Red light" exposure beneficial
 - Age-Related Macular Degeneration (AMD)
 - Skin health, joint health, etc
 - Myopia management?

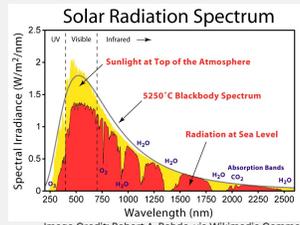


Image Credit: Robert A. Rohde, via Wikimedia Commons

Valter K, Tedford SE, Eells JT, Tedford CE. Photobiomodulation use in ophthalmology - an overview of translational research from bench to bedside. Front Ophthalmol (Lausanne). 2024 Aug 15;4:1388602.

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CONCERNS

Eye Conditions Linked to Sunlight Exposure

1. Photokeratitis
2. Pterygium
3. Pinguecula
4. Cataracts (especially Cortical Cataracts)
5. Age-related Macular Degeneration (AMD)
7. Skin Cancers of the Eyelid
8. Solar Retinopathy

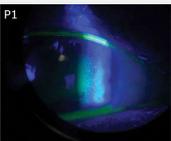


Photo Credit: Sengillo JD, et al. Immunol Inflamm. 2021 Jan 2;29(1):76-80.



Photo Credit: Shi Y, et al. Onco Targets Ther. 2017 May 8

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CONCERNS

Solar Retinopathy

OCT findings:
 Early: Foveal hyperreflectivity (outer retina, RPE).
 Late: Disruption of ellipsoid zone, outer retinal hole in fovea.

Prognosis

- Most patients recover vision spontaneously within weeks to 6 months.
- Scotomas may persist despite good visual acuity recovery.

Treatment

- No specific treatment recommended in most cases.
 - Observation alone often results in full recovery.
- Steroids (systemic, topical, sub-Tenon, suprachoroidal) used in some acute cases:
 - May hasten recovery but do not guarantee better final outcomes.
 - Risk of complications: cataracts, increased IOP, CSCR.

Jourieh M. Solar retinopathy: A literature review. Oman J Ophthalmol. 2024 Jun 27;17(2):173-180.

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CONCERNS



Types of light-induced retinal damage:

1. Photothermal: Requires a local retinal temperature rise $>10^{\circ}\text{C}$.
2. Photochemical: Caused by oxidative stress from light exposure, especially at short (blue) wavelengths.
3. Photomechanical: Involves shock waves from ultrashort pulses

Photochemical damage is dose-dependent:

- irradiance (light intensity) \times exposure time

Damage can occur < 10 seconds

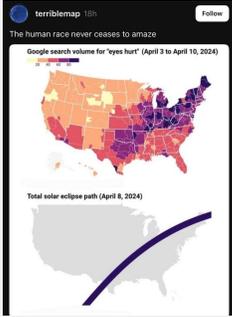
- especially in intense lighting conditions

Damage is cumulative

Youssef PN, Sheibani N, Albert DM. Retinal light toxicity. Eye (Lond). 2011 Jan;25(1):1-14. doi: 10.1038/eye.2010.149. Epub 2010 Oct 29. van Norren D, Vos JJ. Light damage to the retina: an historical approach. Eye (Lond). 2016 Feb;30(2):169-72. doi: 10.1038/eye.2015.218.

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CONCERNS



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SUNGLASSES CAUSE CANCER/HEALTH ISSUES

Parody – not real advice



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SUNGLASSES CAUSE CANCER/HEALTH ISSUES

What you may find or hear...

- Sunglasses prevent melatonin release (sleep cycle/hormones)
- Prevent you from tanning (melanin production)
 - reduction in vitamin D??
 - increased risk of sunburn/cancer/etc



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SUNGLASSES PREVENT PREVENT YOU FROM TANNING?



UV light $>$ melanocytes $>$ melanin

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SUNGLASSES PREVENT PREVENT YOU FROM TANNING?



UV light $>$ melanocytes $>$ melanin



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SUNGAZING

Improve hormones???

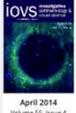
- Melatonin production (more on this later)
- Vitamin D?

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SUNGAZING

Improve hormones???

- Melatonin production (more on this later)
- Vitamin D?



Characterization of Vitamin D Production by Human Ocular Barrier Cells
Investigative Ophthalmology and Visual Science | April 2014
Investigative Ophthalmology & Visual Science April 2014, Vol. 55, 2140-2147

- Demonstrated that ocular barrier epithelial cells express the machinery for vitamin D3
- Suggest that vitamin D3 might have a role in immune regulation and barrier function in ocular barrier epithelial cells.

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Does that make a difference?



~15 minutes of sunlight exposure with 25% of skin exposure =1000IU (face, hands, arms)



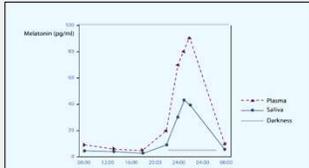


Young AR, et al. Br J Dermatol. 2019 Nov;181(5):1052-1062.
 van Ballegooyen AJ, et al. Int J Endocrinol. 2017;2017:7454376.

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SUNGLASSES PREVENT MELATONIN RELEASE (SLEEP CYCLE/HORMONES)

- ipRGCs (intrinsically photosensitive retinal ganglion cells)
 - sensitive to blue light (peak sensitivity around 480 nm)
 - key role in regulating melatonin and circadian rhythms.
- Exposure to light in the morning may help suppress melatonin and supports healthy sleep-wake cycles



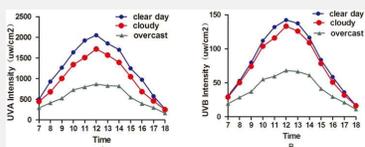
Grivas TB, Savvidou OD. Melatonin the "light of night" in human biology and adolescent idiopathic scoliosis. Scoliosis. 2007 Apr; 4:2:6

Blume C, Münch M. Handbook Clin Neurol. 2025;206:3-16.
 Bailes HJ, Lucas RJ. Cell Mol Life Sci. 2010 Jan;67(1):99-111.

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SUNGLASSES PREVENT MELATONIN RELEASE (SLEEP CYCLE/HORMONES)

- Grey sunglasses can reduce overall visible light transmission (varies based on lens tint)
 - including some reduction in blue light wavelengths.
- Indirect sunlight exposure (not direct sun-gazing) is generally considered lower risk during low UV index times, such as early morning and late evening.



Liu J, Zhang W, et al. PLoS One. 2015 Apr 29;10(4):e0124758.

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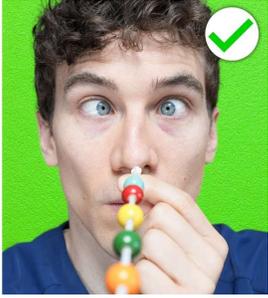
EYE EXERCISES TO IMPROVE EYESIGHT?



Parody – not real advice

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EYE EXERCISES TO IMPROVE EYESIGHT?




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EYE DROPS TO REVERSE CATARACTS?



Parody – not real advice

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EYE DROPS TO REVERSE CATARACTS?

NAC Eye Drops

N-Acetyl Carnasine

Promoted to

- Reverse Cataracts
- Treat Dry Eye
- Prevent Cataracts



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EYE DROPS TO REVERSE CATARACTS?

N-Acetyl Carnasine

Believed to work as

- antioxidant
- prevent glycation
- decreased lens cell telomere shortening



Image credit: Babizhayev MA, 2009

No	Test name	Specification
1	Appearance	White powder
2	Identification	Positive
3	Optical rotation	$[\alpha]_D^{20} + 25.2^{\circ} - +27.5^{\circ}$
4	pH	4.5-5.5
5	Heavy metals	NMT 10 ppm
6	Related substances	l-carnosine: NMT 0.3% Others: NMT 0.2%
7	Residual solvent	2-propanol: NMT 500 ppm
8	Water	NMT 5.0%
9	Residue on ignition	NMT 0.10%
10	Ashy	NLT 99.9% (DPLC area)

Image credit: Babizhayev MA, 2009

Babizhayev MA. Clin Interv Aging. 2009;4:31-50. Epub 2009 May 14.
Wang L, Li X, Men X, Liu X, Luo J. Mol Med Rep. 2025 Jan;31(1):22.

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ChRx Trial | Drugs R D. 2002;3(2):87-103. doi: 10.2165/00126839-200203020-00004.

Efficacy of N-acetylcarnosine in the treatment of cataracts

Mark A Babizhayev¹, Anatoly I Deyev, Valentina N Yermakova, Yuri A Semiletov, Nina G Davtyan, Viktor S Zhornitskiy, Alexander V Zhukovskiy, Val M Goldsman

Affiliations: + expand
PMID: 12001824 DOI: 10.2165/00126839-200203020-00004

Abstract

Purpose: To evaluate the effects of 1% N-acetylcarnosine (NAC) solution on lens clarity over 6 and 24 months in patients with cataracts.

Trial design: Randomised, placebo-controlled study.

Participants: 49 subjects (76 affected eyes) with an average age of 65.3 +/- 7.0 years with a diagnosis of senile cataract with minimum to advanced opacification in various lens layers.

Methods: 26 patients (41 eyes) were allocated to topical NAC 1% eyedrops twice daily. The control group consisted of 13 patients (21 eyes) who received placebo eyedrops and 10 patients (14 eyes) who did not receive eyedrops.

Main outcome measures: All patients were evaluated at entry and followed up every 2 months for a 6-month period (trial 1), or at 6-month intervals for a 2-year period (trial 2), for best-corrected visual acuity and glare testing. In addition, cataract was measured using stereochematographic diff-images and retro-illumination examination of the lens. Digital analysis of lens images displayed light

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Cochrane Database of Systematic reviews | Review | Intervention

N-acetylcarnosine (NAC) drops for age-related cataract

Vincent DJ-P Bubbis, Andrew Bastawrous | Authors' declarations of interest

Version published: 28 February 2017 | Version history
https://doi.org/10.1002/14652875.cd009493.pub01/7

Main results

We identified two potentially eligible studies from Russia and the United States. One study was split into two arms: the first arm ran for six months, with two-monthly follow-up; the second arm ran for two years with six-monthly follow-up. The other study ran for four months with a data collection point at the start and end of the study only. A total of 114 people were enrolled in these studies. The ages ranged from 55 to 80 years.

We were unable to obtain sufficient information to reliably determine how both these studies were designed and conducted. We have contacted the author of these studies, but have not yet received a reply. Therefore, these studies are assigned as 'awaiting classification' in the review until sufficient information can be obtained from the authors.

Authors' conclusions

There is currently no convincing evidence that NAC reverses cataract, nor prevents progression of cataract (defined as a change in cataract appearance either for the better or for the worse). Future studies should be randomized, double-masked, placebo-controlled trials with standardised quality of life outcomes and validated outcome measures in terms of visual acuity, contrast sensitivity and glare, and large enough to detect adverse effects.

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CONCERNS

Brand:	Can-C
Country of Manufacture:	India
Package Type:	Multi-dose bottle
Contains preservative(s):	Yes
Preservative:	Benzyl alcohol
Active ingredient(s):	No FDA-registered ingredient list
Inactive ingredient(s):	No FDA-registered ingredient list
NDC(s):	None (why this matters)
FDA Action:	9/11/23 Warning Letter to DR Vitamins LLC dba DR Vitamin Solutions 11/13/23 Warning Letter to Amazon.com Inc

eyedropsafety.org

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How do we talk to patients about this?



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CORE METHODS FOR TALKING TO PATIENTS

1. Use Empathy, Not Judgment

- Acknowledge concerns without dismissing them.
- Avoid confrontation; focus on listening and understanding.
- Use phrases like: "I understand why that might be concerning..."



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CORE METHODS FOR TALKING TO PATIENTS

2. Establish Common Ground

- Agree on shared values (e.g., wanting to avoid medications or surgery)
- Emphasize mutual goals: health, safety, autonomy.



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CORE METHODS FOR TALKING TO PATIENTS

Ask Questions to Explore Beliefs

- Use open-ended questions: "Can you tell me more about what you've heard?"
- This helps uncover sources of misinformation and build rapport.

Be Curious.
Not Judgmental.
-Walt Whitman

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CORE METHODS FOR TALKING TO PATIENTS



4. Correct Gently with Trusted Evidence

- Offer facts without shaming or overwhelming with data.
- Cite trusted sources (CDC, WHO, academic medical institutions).
- Use visuals or analogies to explain concepts simply.

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CORE METHODS FOR TALKING TO PATIENTS

5. Tell Stories! Not Just Stats



- Personal stories (from your practice or others) are powerful.
- Example: "I had a patient who practiced sungazing - eventually she came in because she was seeing a spot in her vision...(solar retinopathy)"

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CORE METHODS FOR TALKING TO PATIENTS

6. Preserve Autonomy and Avoid Ultimatums

- People resist when they feel pressured.
- Say things like: "I want you to feel fully informed so you can make the best decision for you and your family."

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CORE METHODS FOR TALKING TO PATIENTS

7. Debunk Myths Carefully (The "Truth Sandwich")



- Start with the truth → state the myth briefly → end with a reinforcing truth.
- Example: "Vaccines are safe and protect against disease. Some people think they cause autism, but this has been proven false. The truth is, vaccines are one of the most studied medical interventions we have."

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Thank You!!




www.DoctorEyeHealth.com

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