PATIENT EDUCATION SERIES

Dry Eye Disease and Nutrition

Understanding Dry Eye Disease and the Key Nutrients that Influence it



Date of Preparation: October 2026
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WHAT WE'LL COVER

Understanding Dry Eye Disease and Nutrition

01



What Is Dry Eye Disease?

Breaking down the definition of Dry Eye Disease

02



The Evidence

Looking at scientific evidence behind nutrition for the eye

03

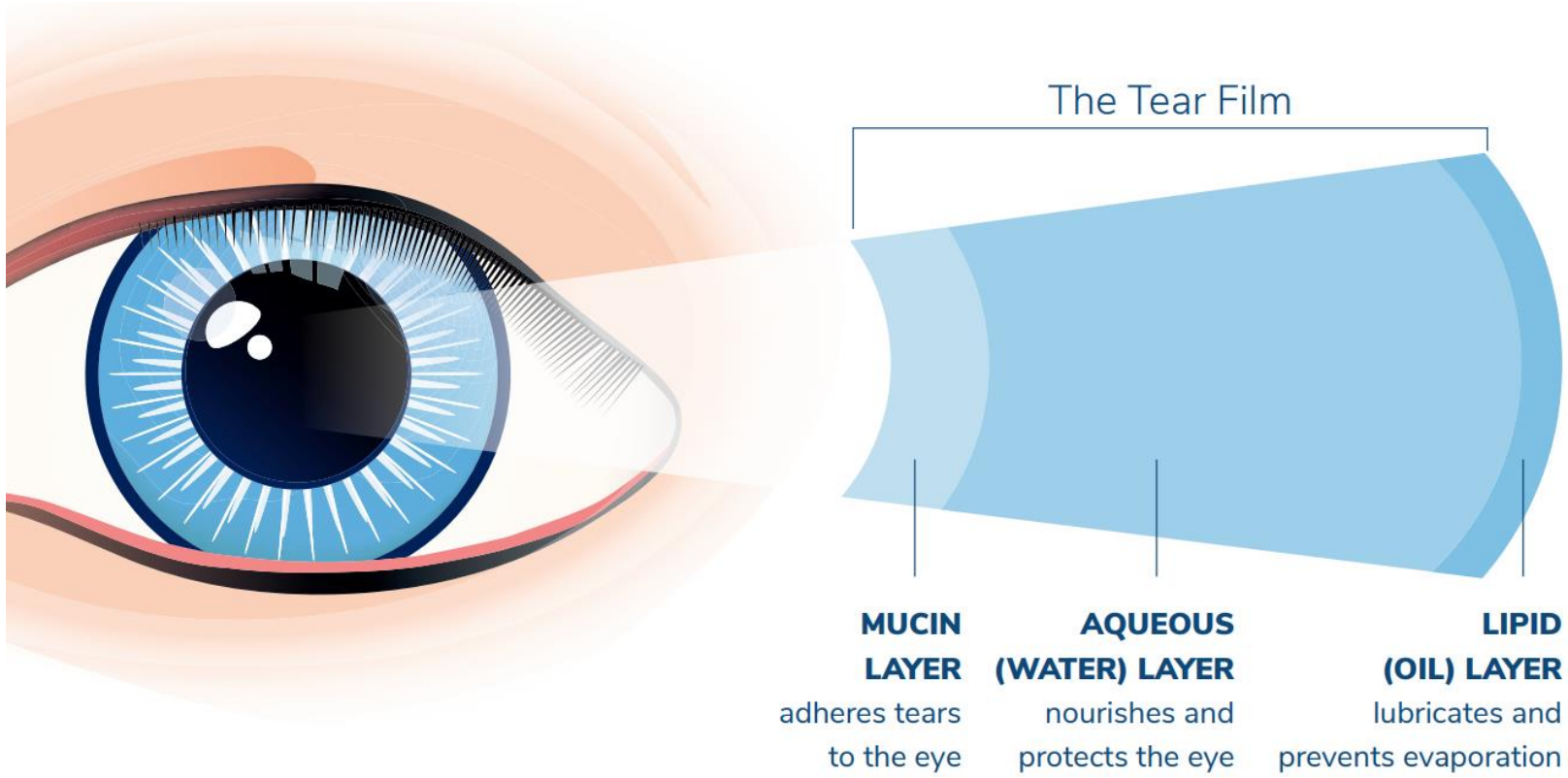


Should You Supplement?

What the evidence means for your own eye health



What is Dry Eye Disease?



The surface of your eye is covered by a thin layer of tears, called the Tear Film. Your Tear Film has several important functions; it washes, protects, nourishes and lubricates the eye.

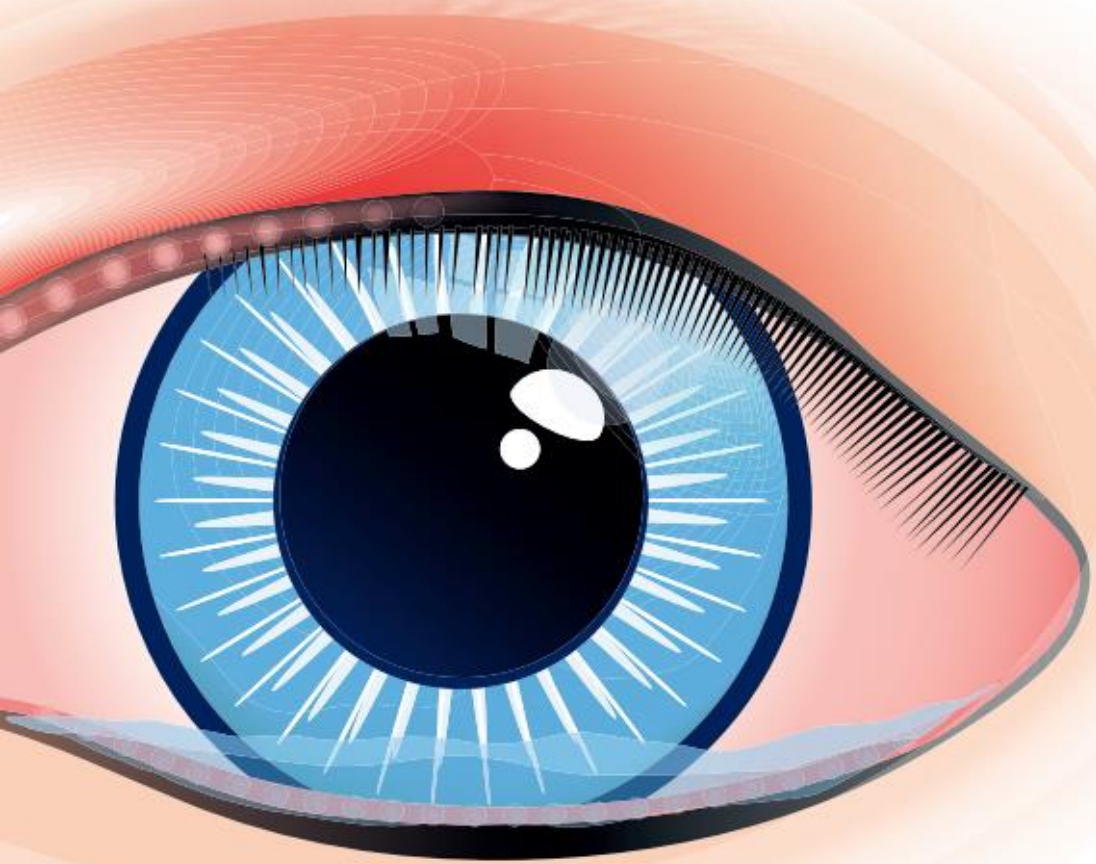
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Dry Eye Disease is a condition where the natural balance of the tears and/or surface of the eye is disrupted, causing symptoms such as dryness and discomfort.

Lifestyle, including nutrition, play an important role in the holistic management of Dry Eye.

(Wolffsohn et al., 2025)

Dry Eye can be **caused by many factors including**:



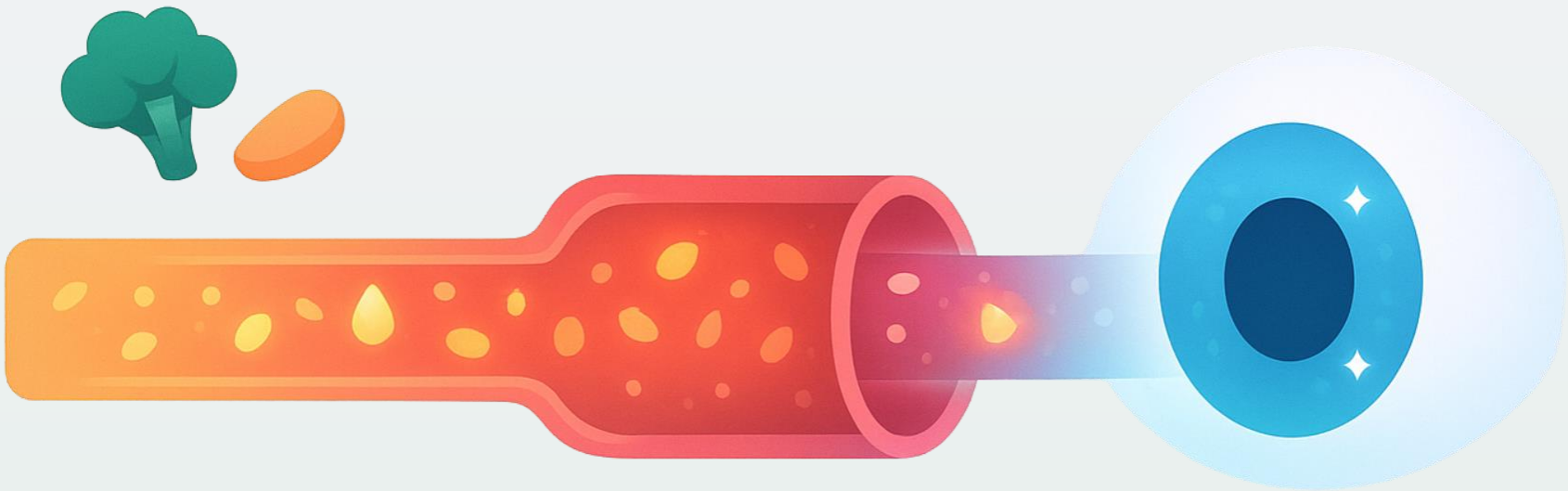
- Aging and hormonal changes
- Environmental conditions such as air conditioning in cars, offices and airplanes
- Poor diet and dehydration
- Increased tablet, phone or PC use, leading to reduced blinking
- Contact lens wear
- Certain eye surgeries
- Certain medical conditions such as Diabetes and Sjögren's Syndrome
- Use of anti-histamines and some other medications

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What are the key nutrients in Dry Eye Disease?

The Eye Nutrition Pipeline



INGEST

Nutrients from food & supplements

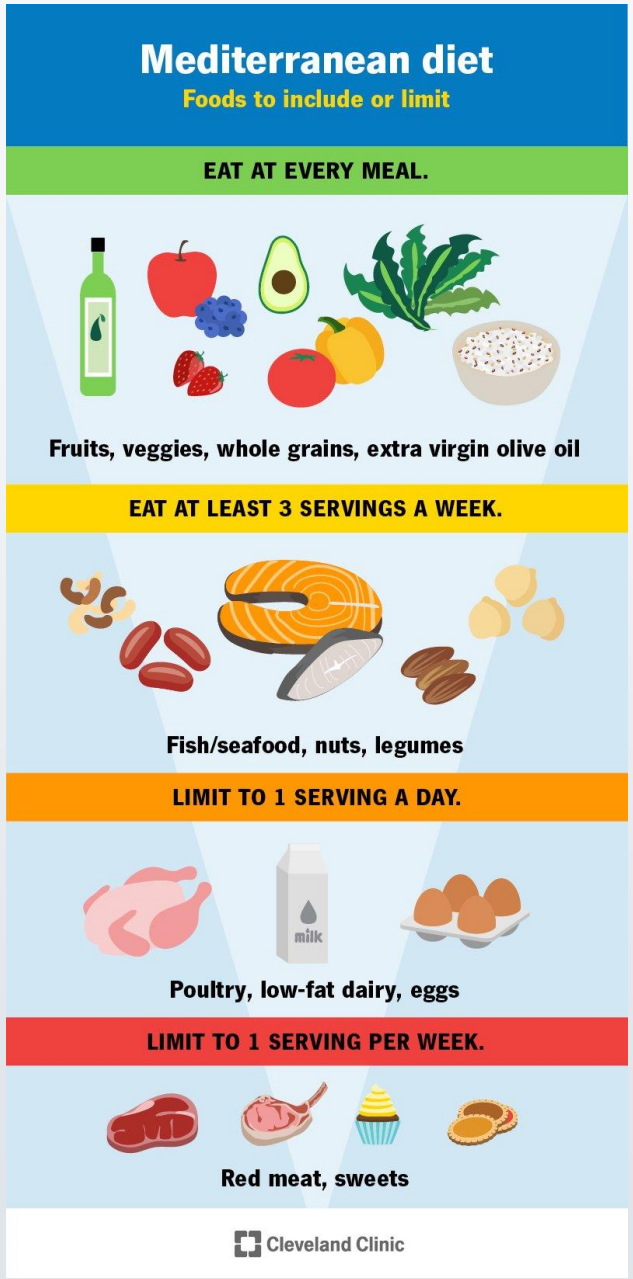
ABSORB

Nutrients enter the bloodstream

DELIVER

Hydration & nourishment reach the eye

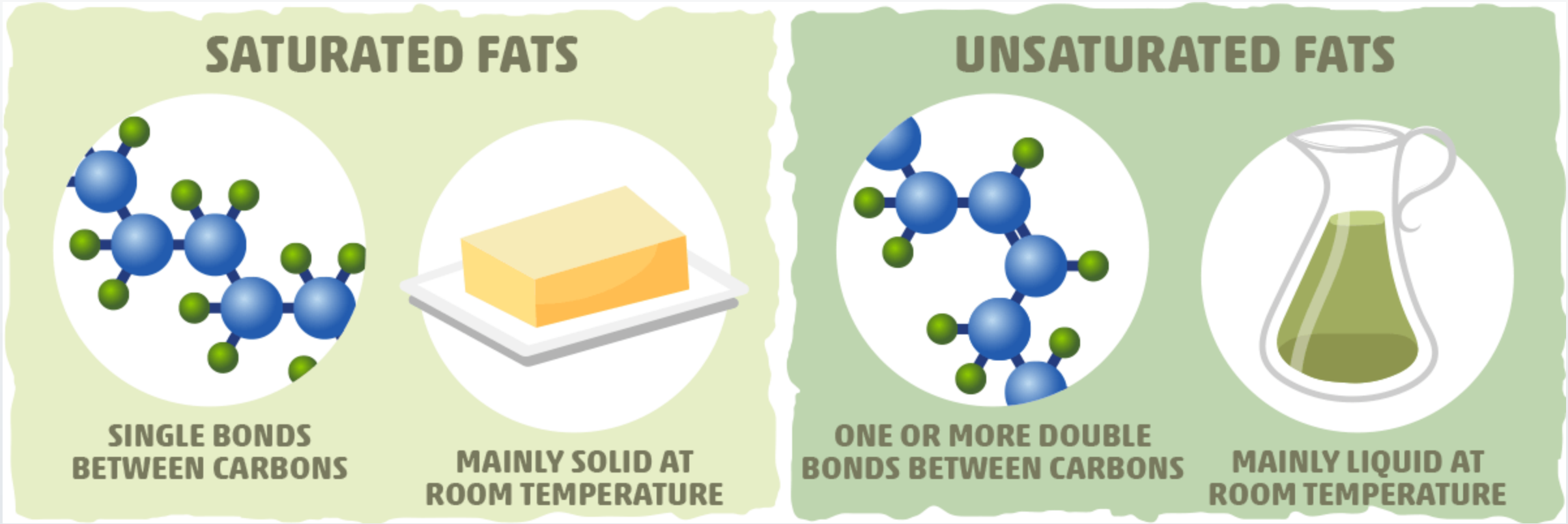
Nutrients can be delivered to the eye by absorption from the gastrointestinal system into the bloodstream, to travel to the eye.



The Mediterranean Diet is rich in exactly the things the eye needs to fight oxidative stress and inflammation; and low in foods that drive oxidative stress and inflammation.

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Saturated vs Unsaturated Fats



There is an abundance of literature that discusses the role of unsaturated fats such as Omega 3, 6, 7 & 9.

(Clarke, 2021)

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How to Source Your Omega-3s: The Conversion vs. Direct Pathways

Plant-Based Sources (The ALA Pathway)





These foods provide **Alpha-Linolenic Acid (ALA).** The body must actively convert ALA into EPA and DHA for optimal biological use.

Marine-Based Sources (The SMASH Pathway)

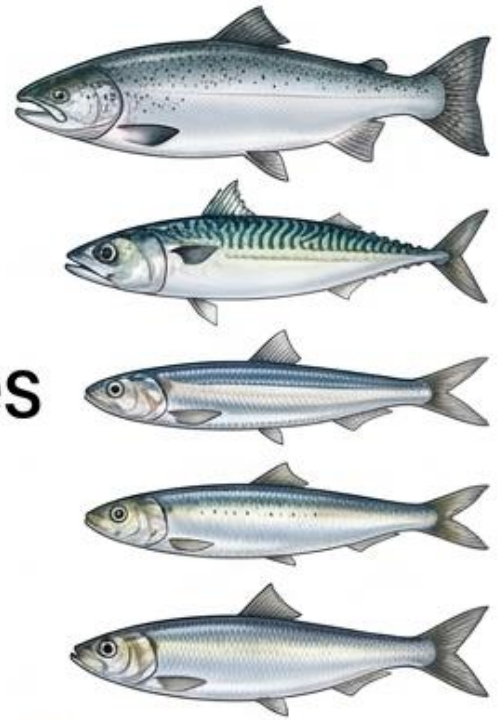
Salmon

Mackerel

Anchovies

Sardines

Herring



These foods provide EPA and DHA **directly, requiring no biological conversion by the body.**

Bioavailable EPA & DHA

OMEGA-3 PROCESSING

From fish oil to re-esterified triglycerides

01 Natural triglycerides (TG)



Omega-3 naturally present in fish oil

Oil extraction

02 Unpurified TG oil



May contain contaminants such as PCBs and dioxins

+ Ethanol

Purification & concentration

03 Ethyl ester (EE) omega-3



Concentrated EPA + DHA

Re-esterification

04 Re-esterified triglycerides (rTG)



Fatty acids reattached to glycerol

Enhanced absorption*

*Higher bioavailability than EE; results depend on formulation and meal conditions. Dyerberg et al., 2010.

OMEGA-7

What is sea buckthorn — and why omega-7?



Hippophae rhamnoides

Meet sea buckthorn

A hardy orange berry that grows in cold climates. Its fruit oil is naturally rich in omega-7, alongside other fats and antioxidants.

What is omega-7?

Omega-7 (palmitoleic acid) is a monounsaturated fat — a type of fat with one double bond in its structure.

Sea buckthorn oil has been studied in people with dry eye.

Less common on our plates

Sea buckthorn berries and macadamia nuts are plant sources of omega-7, but many of us do not eat them regularly.

Sea buckthorn is the plant. Omega-7 is one of the fats in its oil.

Dry eye study: Larmo et al., *J Nutr.* 2010;140;1462–1468.

Omega-3 & omega-7

Different sources. Both studied in dry eye.

OMEGA-3



Food sources

More widely available: oily fish, walnuts and seeds.
Fish provides EPA and DHA; nuts and seeds provide ALA.

Function studied

Research includes the oily (lipid) tear layer, oil-producing glands and inflammation.

Vegan options?

Fish oil is not vegan.

OMEGA-7



Food sources

Sea buckthorn and macadamia nuts — foods many of us eat less often.

Function studied

Sea buckthorn oil: mucous membrane health.
Omega-7 and sea buckthorn: tear fluid (the aqueous component) and inflammation.

Vegan options?

Sea buckthorn oil is plant-based.
Often vegan.

Both have been studied in dry eye.
Your eye care professional can help you decide whether a supplement is suitable.

Sources: NiH ODS, Omega-3 Fact Sheet; Asbell et al., 2018; Epitropoulos et al., 2016; Larmo et al., 2010 and 2014; Nakamura et al., 2017 (animal study).

NUTRITION & EYE HEALTH

Vitamin D & dry eye

A small nutrient with an important role



Vitamin D helps regulate the immune system and inflammation.

Low levels may matter

Low vitamin D levels are linked with dry eye. This does not prove that low vitamin D causes it.

People living at northern latitudes, including Ireland and the UK, are at higher risk of deficiency, especially in winter.

Correcting a deficiency may help

If your vitamin D is low, supplements may improve tear volume and help tears stay on the eye for longer.

Why supplements are widely recommended

Vitamin D supplements are widely recommended because we make much of our vitamin D through sunlight, and during the winter months our skin may not make enough.

Rajashekar Y et al., 2025; Zhou X et al., 2025.

Your gut & dry eye

Everyday habits to support your gut microbiome

What's the connection?

Your gut microbiome is the community of microbes in your digestive system. Changes in these microbes have been linked with dry eye disease.

Research into the gut–eye connection is still developing.



Eat a diverse diet

Enjoy a variety of vegetables, fruit, beans, nuts and seeds.

Choose fibre & wholegrains

Try oats, brown rice and wholemeal bread. Increase fibre gradually.

Try fermented foods

Include fermented fruit and vegetables. Start with small portions.

Use antibiotics wisely

Take them only when prescribed and follow the instructions.

Keep alcohol modest

Drink less and include alcohol-free days.

Manage everyday stress

Make time for sleep, movement and relaxation.

Support your gut health alongside your usual dry eye care.

(Markoulli et al, 2023; Nguyen, 2024)

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Why would I need a supplement?

NUTRITION & EYE HEALTH

Why supplements may help

Extra support when intake is difficult to achieve.

Omega-3

A consistent daily intake



2–3 g EPA + DHA / day

An intake used in some dry eye studies.

~140 g salmon every day*

A measured supplement dose may be more practical when oily fish is not eaten regularly.

Omega-7



~140 sea buckthorn berries per day*

2 g omega-7-rich sea buckthorn oil

Sea buckthorn oil has been used in eye health studies.

Vitamin D

When sunlight is limited



Winter sunlight may not be enough

At northern latitudes, winter UVB is too weak for reliable vitamin D production.

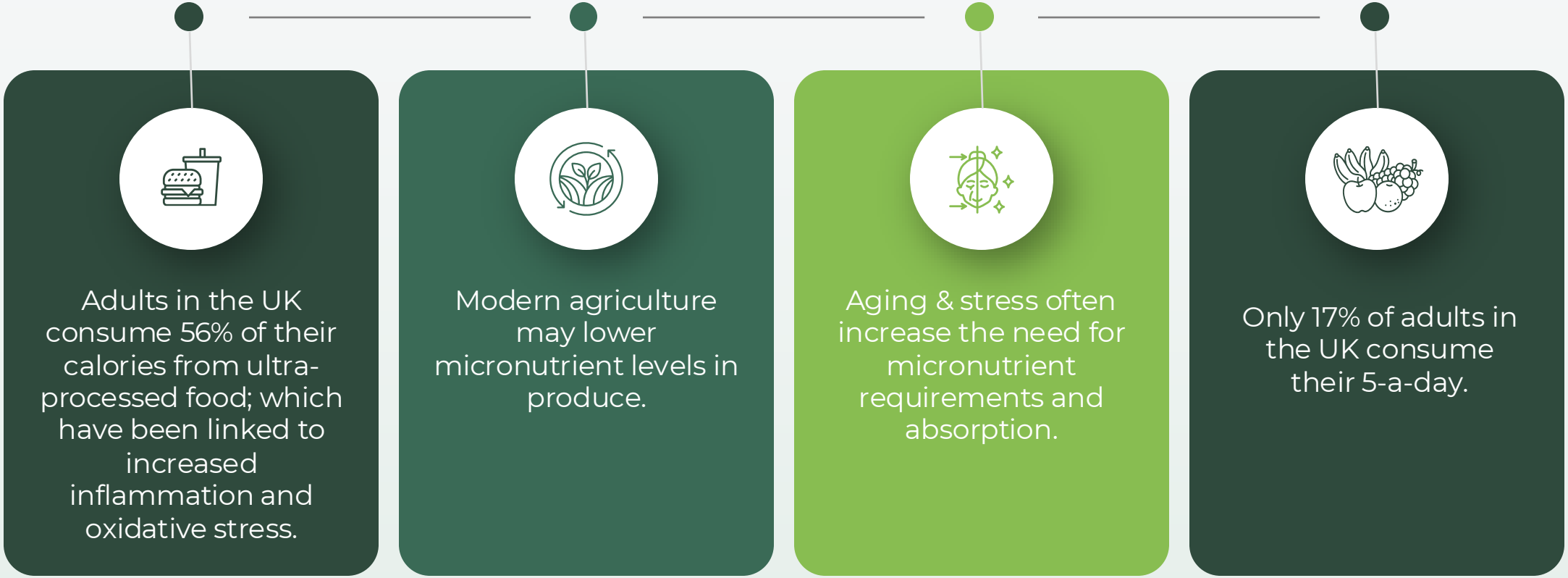
NHS guidance: consider a daily vitamin D supplement in autumn and winter.

Supplements can help meet an intake target. They complement a balanced diet and personalised care.

*Cooked farmed Atlantic salmon; approximate EPA + DHA content varies. NIH food-composition data; Larmo et al., 2010; NHS vitamin D guidance.

*Berry equivalence: internal estimate, not published data. Study doses are not a daily requirement.

Dietary Patterns and Micronutrient Decline



Insufficient **intake** of key micronutrients, particularly when combined with increased physiological **demands**, may contribute to **oxidative stress and chronic inflammation**.

(Rauber et al, 2019; U.S. Department of Agriculture, 2025; Lopresti, 2020; BAPEN, 2025; Healthy Ireland, 2024)

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What should I consider in choosing a supplement?

Dosage

✓ based on high-quality

✓ within global safe recommendations.

Expert Approved

✓ Supplements approved and recommended by Eyecare Professionals.



Quality of Ingredients

✓ Consistency

✓ Bioavailability

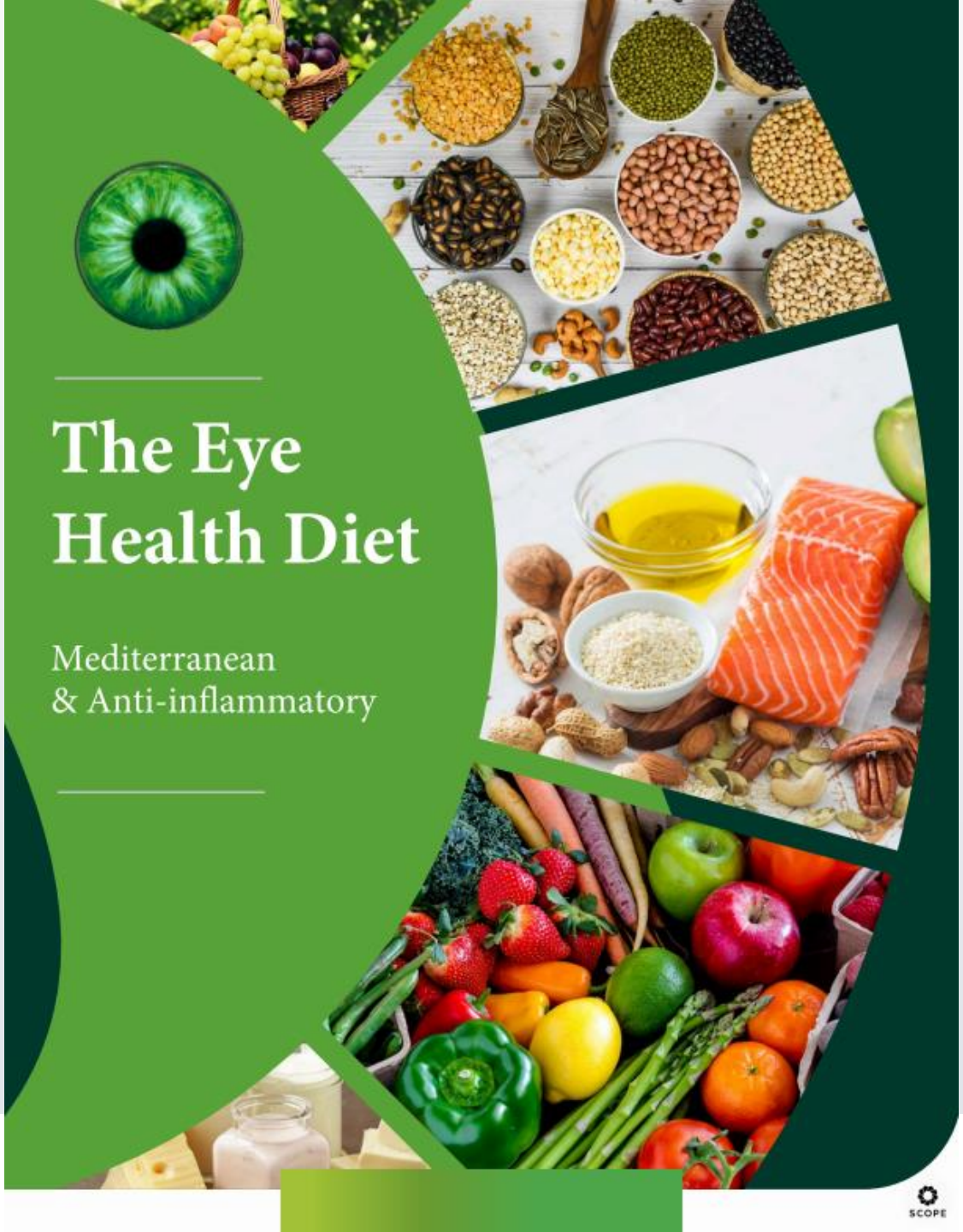
✓ Backed by research

Independent Testing

✓ rigorous testing reinforces transparency, reliability and safety

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Patient Eye Health Diet Book



Available to your clinician at scope-connect.com

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Key Takeaways

- Dietary factors can play an important role in the management of Dry Eye Disease
- The Mediterranean Diet is the most evidence-based diet in Dry Eye Disease
- Omega-3 and Omega-7 both have a role in Dry Eye- and are differentiated based on the drivers of Dry Eye.
- A high-quality supplement is a simple, evidence-based step worth discussing with your Eyecare Professional.

Talk to your optometrist or ophthalmologist about whether a supplement is right for you.