



IMPACT OF OMEGA-7 SUPPLEMENTATION ON OCULAR INFLAMMATION IN SEVERE AUTOIMMUNE DRY EYE: CASE REPORT

Mila Ioussifova¹; Edel Duffy²; Shovan Bhattacharrya²; Caitriona Shelley²

¹ South Waterfront Eyecare, Portland, Oregon, USA

² SCOPE Ophthalmics Ltd., Dublin, Ireland

Speaker: Caitríona Shelley RD





CONFLICT OF INTEREST DISCLOSURE

☒ I have the following potential disclosure to report

Speaker: Caitriona Shelley

Disclosures:

- Dr. Mila Ioussifova has served as a consultant for Scope Eyecare and received honoraria.
- Dr. Edel Duffy, Dr. Shovan Bhattacharrya, and Caitriona Shelley are employees of Scope Eyecare / Scope Ophthalmics.
- The intervention discussed includes Eyetamins Eye Comfort (sea buckthorn oil omega-7).



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Background

- Autoimmune dry eye (e.g., Sjögren's) is driven by aqueous deficiency, inflammation, tear instability, and often co-existing Meibomian Gland Dysfunction (MGD).¹
- Standard care includes topical immunomodulators, lubrication, lid management, and procedures; nutritional adjuncts are increasingly explored.¹
- Omega-7 (palmitoleic acid) from sea buckthorn oil is an emerging nutritional adjunct in dry eye.
- Palmitoleic acid systemic status can be tracked in fatty acid profiles.
- Clinical and pre-clinical studies have demonstrated:
 - Attenuation of **tear osmolarity**²
 - Improvements in ocular symptoms²,
 - Impact on **inflammatory markers**³.A
 - Support of **mucous membrane health**³;
 - Pre-clinical findings indicating **restoration of lacrimal gland tear secretion**⁴.



Himalayan Sea Buckthorn Berries





Purpose & Methods

Evaluate systemic uptake of omega-7 from sea buckthorn oil supplementation.

Evaluate the impact of oral omega-7 (sea buckthorn oil) on ocular surface inflammation, tear film parameters, and epithelial integrity in a 4 month period; observed within routine clinical care without IPL or other in-office procedures.





Methods: Patient Profile & Baseline

Patient Profile



- 37-year-old female

Medical History

- Sjögren's syndrome
- Hashimoto thyroiditis
- Rheumatoid arthritis
- Hashimoto's thyroiditis
- Additional comorbidities.

Baseline Ocular Findings



- MGD
- Ocular rosacea
- Demodex blepharitis
- Punctate keratitis
- Lagophthalmos





Concurrent Therapies

- Lotilaner ophthalmic solution 0.25% BD (6-week course)
- Cyclosporine ophthalmic solution 0.09% BD
- Preservative-free artificial tears PRN
- Omega-3 fatty acid supplementation
- Behavioural measures:
 - Blinking exercises
 - Screen breaks
- Punctal occlusion with canalicular gel

Intervention Added (Omega-7)

- Sea buckthorn oil (Eyetamins Eye Comfort) 2000 mg daily with food.
- Duration: 4 months continuous supplementation.
- No IPL or additional in-office procedures during the observation window.
- Omega-7 (% palmitoleic acid) monitored via omega index panel.



Results

Assessment	Unit	Baseline	4 Months
Tear Meniscus Height (OD/OS)	mm	0.17/0.20	0.38/0.41
Conjunctival Staining (OD/OS)	Grading scale	Grade 1 LG/ Trace OS	No staining OU
Corneal Staining (SPK)	Grading scale	Grade 1 inferior OU	Grade 1 inferior OD/ trace OS
MMP-9	Qualitative	Positive OU	Negative OU
Palmitoleic acid	Percentage (%) of total fatty acids	0.86	1.03 (20% increase)

LG= Lissamine Green

SPK = Superficial punctate keratitis (corneal epithelial staining)

MMP-9 = Matrix metalloproteinase-9 (inflammatory marker)



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Proposed Mechanisms of Action

Sea buckthorn oil is the world's richest plant source of omega-7 fatty acids, providing up to 35% palmitoleic acid alongside omega-3, -6, and -9 fatty acids, carotenoids, tocopherols, and phytosterols. Its proposed mechanism of action is as follows:

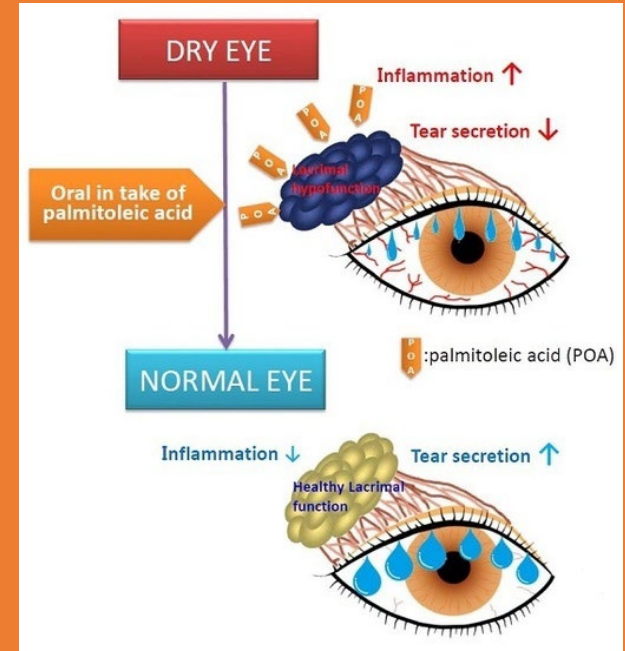
Anti-inflammatory

Palmitoleic acid modulates NF- κ B signalling and reduces pro-inflammatory cytokines (IL-1 β , TNF- α).^{1,2}

Pre-clinical data also suggest reduced lacrimal gland inflammation with associated preservation of tear secretion.²

Epithelial Support

Sea buckthorn oil may support mucous membranes and epithelial integrity through barrier-supporting fatty acids and antioxidants, which reduce oxidative stress and contribute to epithelial repair and re-epithelialisation.³



Graphical Abstract of Palmitoleic Acid Mode of Action
Nakamura, et al., (2017) Nutrients. 2017 Apr 5;9(4):364. doi: 10.3390/nu9040364.



Conclusion & Next Steps

- Omega-7 sea buckthorn oil supplementation alongside SOC correlated with resolution of inflammatory and conjunctival staining markers and improved tear volume.
- Omega-7 index increase supports systemic uptake during the period of clinical improvement.
- Case design limits causal inference; controlled trials are warranted.

