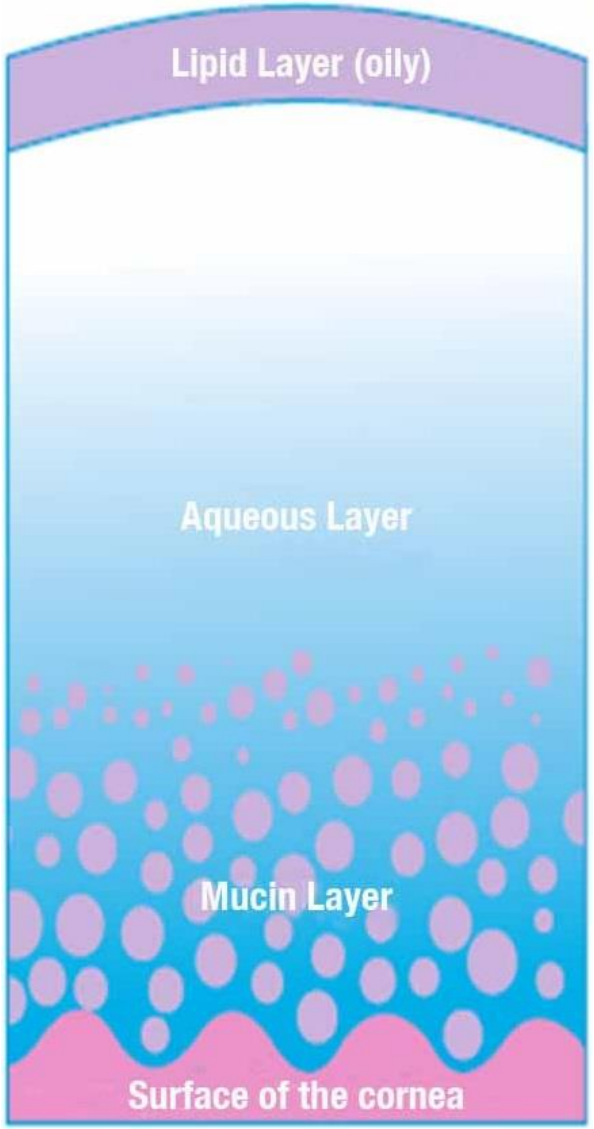
Autores: M. Ramalho, P. Pego, F. Vaz, S. Pina, C. Santos, C. Pedrosa, I. Coutinho, M. Mota, I. Prieto
Director de Serviço: Dr. António Melo

OLHO SECO

Inovações em Olho Seco

FILME LACRIMAL



- Reduz evaporação
- Mantém humidade
- Aumenta a estabilidade do FL
- Lubrifica as pálpebras

Colesterol
Ácidos Gordos
Triglicéridos

- Hidrata
- Nutrientes e oxigénio
- Mantém viscosidade

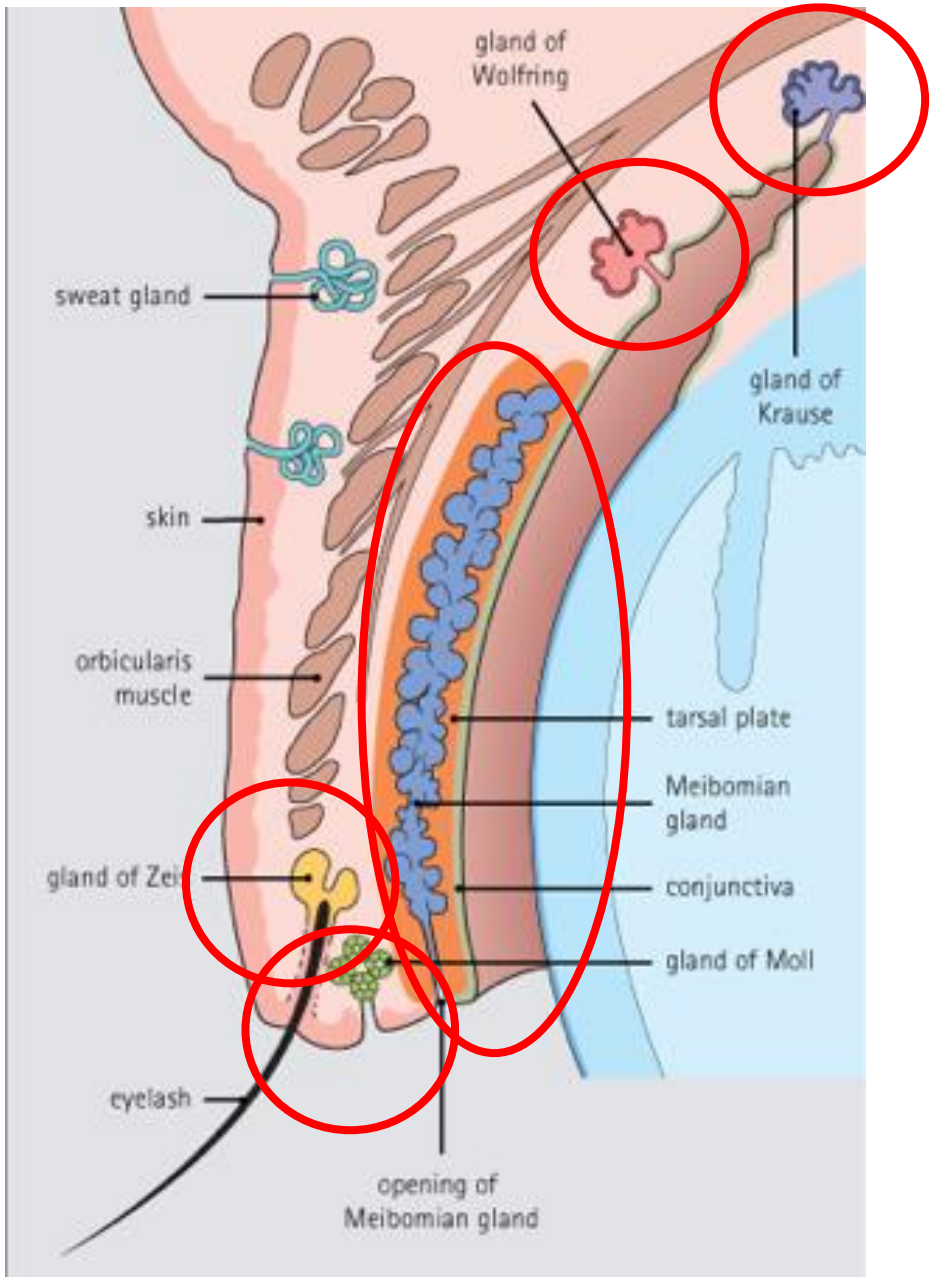
Água Iões Lisozima
Imunoglobulinas Citocinas
Glicose Ureia Lactato

- Permite a adesão do filme lacrimal à superfície ocular

Ácido hialurónico
Proteinas de alto peso molecular

PÁLPEBRA

- Proteção do olho
- Pestanejar: proteção e estabilidade do filme lacrimal
- Rica em glândulas
  - Wolfring (5)
  - Krause (50)
  - Meibomius
  - Moll
  - Zeis



DEFINIÇÃO DE OLHO SECO

National Eye Institute/
Dry Eye Workshop
(1995)

Dry eye is a disorder of the tear film due to tear deficiency or excessive evaporation, which causes damage to the interpalpebral ocular surface and is associated with symptoms of ocular discomfort

International Dry
Eye Workshop
(2007)

Dry eye is a multifactorial disease of the tears and ocular surface that results in symptoms of disconfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface.

PREVALÊNCIA

- 14.5% (17.9% mulheres; 10.5% homens)
- 5–30% acima dos 50 anos

Beaver Dam Offspring Cohort, Abril 2014

FATORES DE RISCO

COMPROVADOS

- Idade
- Sexo feminino
- Pós-menopausa
- Anti-histamínicos
- LASIK
- Transplante medula
- Radioterapia
- Défice de vitamina A
- Hepatite C

PROVÁVEIS

- Hispânicos e asiáticos
- Diabetes Mellitus
- HIV
- Sarcoidose

Medicação:

- Anti-depressivos
- Diuréticos
- Betabloqueantes
- Isotretinoína

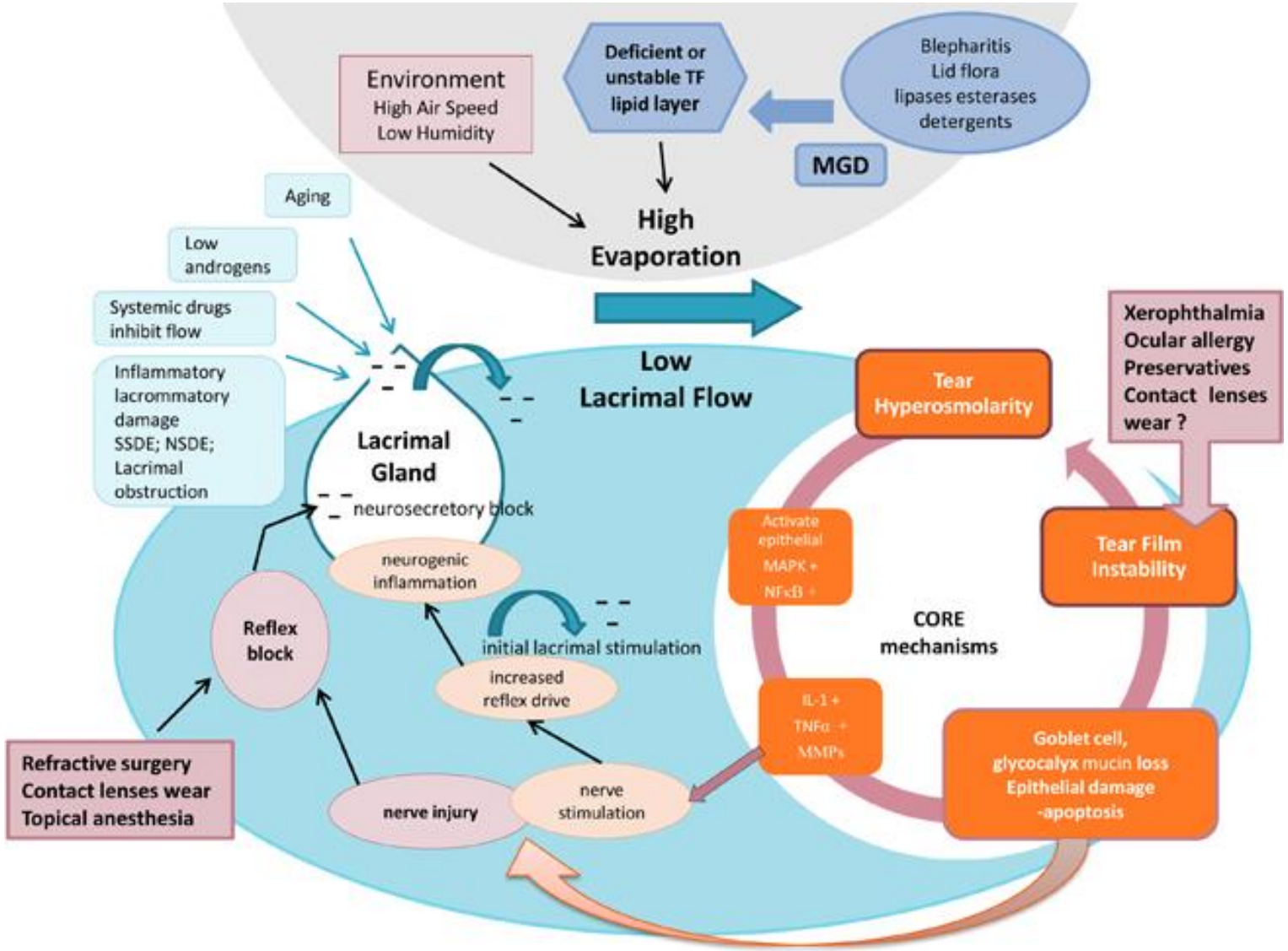
POSSÍVEIS

- Fumador
- Hábitos alcoólicos
- Menopausa

Medicação:

- Anti-colinérgicos
- Ansiolíticos
- Anti-psicóticos
- Injecção de toxina botulínica

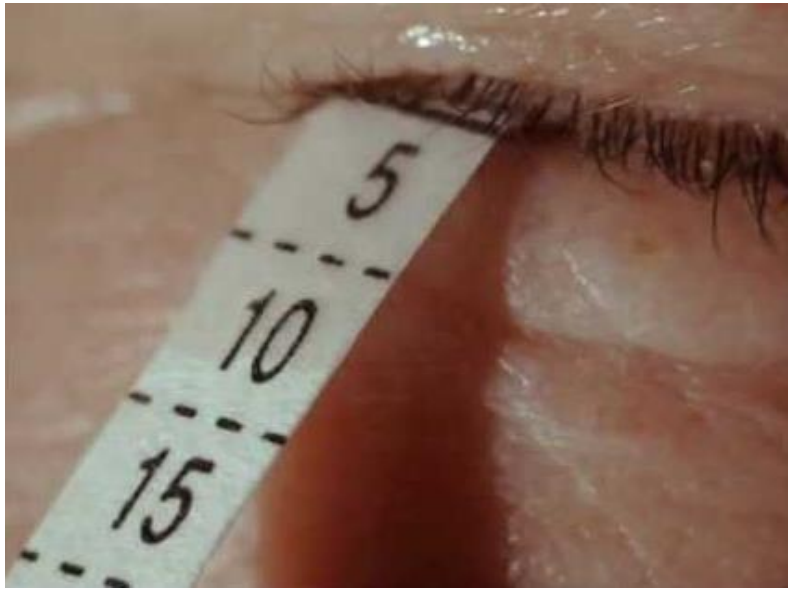
ETIOPATOGÉNESE

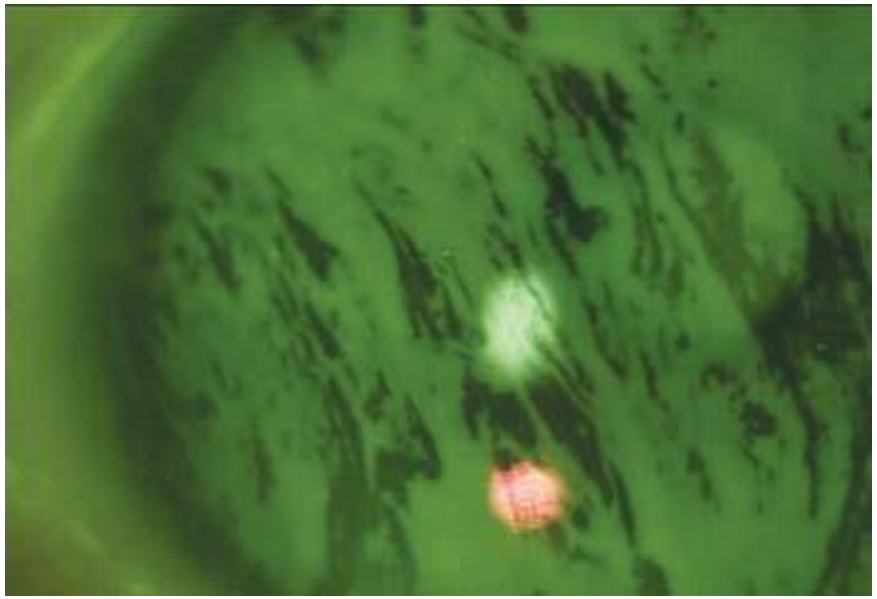


- **Deficiência aquosa**
  - Sjogren
  - Medicação sistémica
  - Bloqueio nervoso
- **Evaporação**
  - DGM
  - Alterações palpebrais
  - Pouco pestanejo

DIAGNÓSTICO

- **Teste de Schirmer**
- **Break-up time do filme lacrimal (BUT)**
- **Menisco lacrimal**
- **Corantes**
- Questionário
- Conteúdo de lactoferrina
- Citologia de impressão





DIAGNÓSTICO

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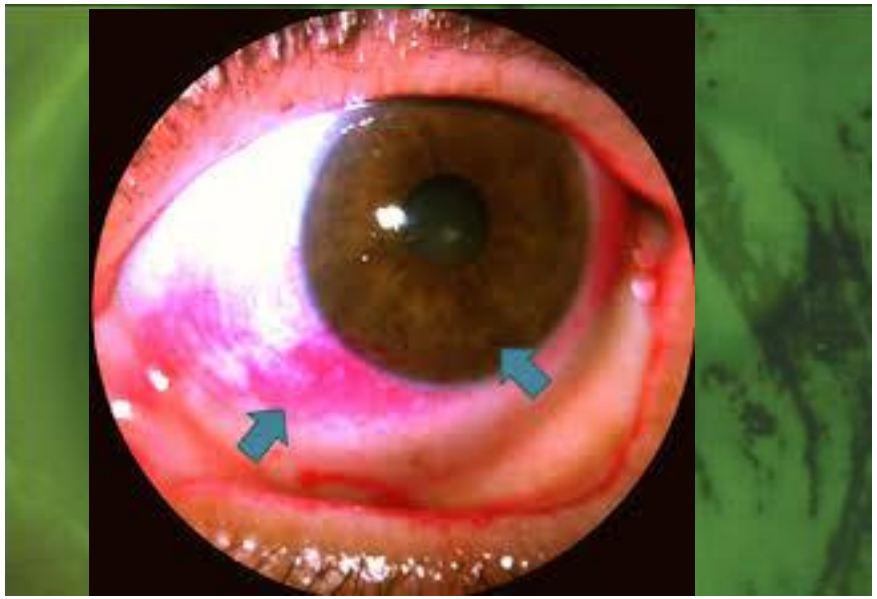
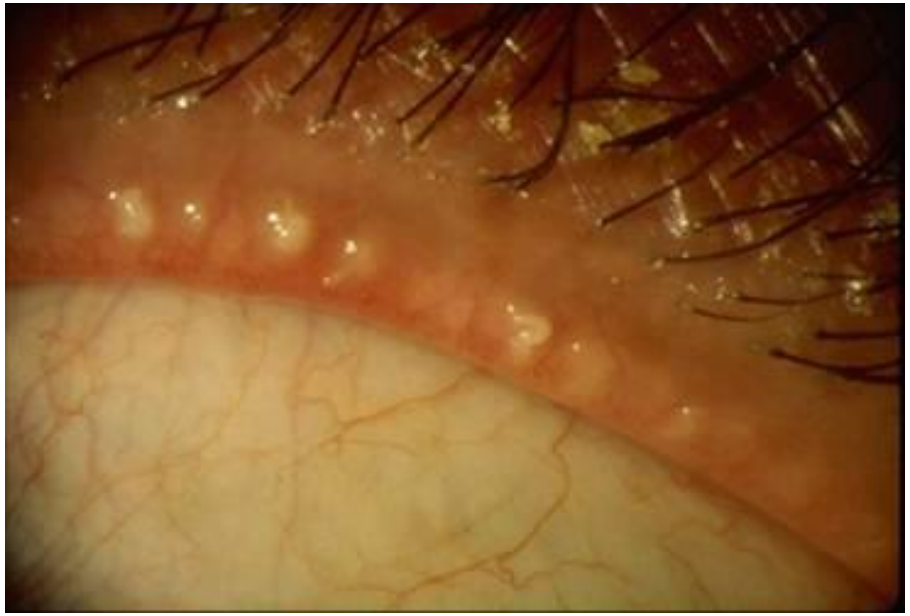


DISFUNÇÃO DAS GLÂNDULAS DE MEIBOMIUS

- Falha na produção ou secreção lipídica
- Comum em idosos
- Climas frios
- Sintomas inespecificos



TRATAMENTO

Severity Level	1	2	3	4
Symptoms	Mild to moderate	Mild to moderate	Severe	Extremely severe
Conjunctival Signs	Mild to moderate	Staining	Staining	Scarring
Corneal Staining		Mild punctate staining	Marked punctate staining, central staining, filamentary keratitis	Severe staining, corneal erosions
Other Signs		Tear film, decreased vision (blurring)		
Treatment Options	• Patient education • Environmental modification • Preserved tears • Control allergy	• Nonpreserved tears • Gels, ointments • Cyclosporine A • Topical steroids* • Secretagogues • Nutritional support	• Oral tetracyclines • Punctal plugs (once inflammation is controlled)	• Systemic anti-inflammatory therapy • Oral cyclosporine Acetylcysteine • Moisture goggles • Surgery (punctal cautery)
	If no improvement, add level 2 treatments	If no improvement, add level 3 treatments	If no improvement, add level 4 treatments	

SUPLEMENTAÇÃO DE LÁGRIMA

- Que lágrima?

SUPLEMENTAÇÃO DE LÁGRIMA

- Soluções hipo ou isotónicas
- pH neutro/ligeiramente alcalino
- Eletrólitos
- Surfactantes
- Agentes de viscosidade
- Conservantes

SUPLEMENTAÇÃO DE LÁGRIMA

- **Hidrofilicos**
  - Soluções aquosas
  - 2 min após instilação 80% eliminado pela drenagem lacrimo-nasal

- **Lipofilicos**
  - Emulsões e suspensões
  - Maior estabilidade da substância ativa
  - Maior penetração ocular

SUPLEMENTAÇÃO DE LÁGRIMA

- **Pomada**
  - Mistura de óleo mineral e petrolato
  - Geralmente sem conservantes

- **Gel**
  - Polimeros de acrilato (carbómeros)
  - Maior tempo de atuação relativamente às soluções
  - Menor turvação da visão relativamente às pomadas

SUPLEMENTOS

Short-term Consumption of Oral Omega-3 and Dry Eye Syndrome

2013

Haleh Kangari, OD, PhD,[1] Mohammad Hossein Eftekhari, MD,[2] Sara Sardari, MSc,[1] Hassan Hashemi, MD,[3] Jamshid Salamzadeh, PhD,[4] Mohammad Ghassemi-Broumand, MD,[5] Mehdi Khabazkhoob, MSc[6]

Purpose: To assess the effect of oral omega-3 fatty acids on tear break-up time (TBUT), Schirmer's score, and Ocular Surface Disease Index (OSDI) through a double-blind clinical trial.

Design: Randomized, double-blind clinical trial.

Participants: Sixty-four patients with dry eye symptoms between the ages of 45 and 90 years were randomized into 2 groups: 33 persons in the treatment group and 31 persons in the placebo group.

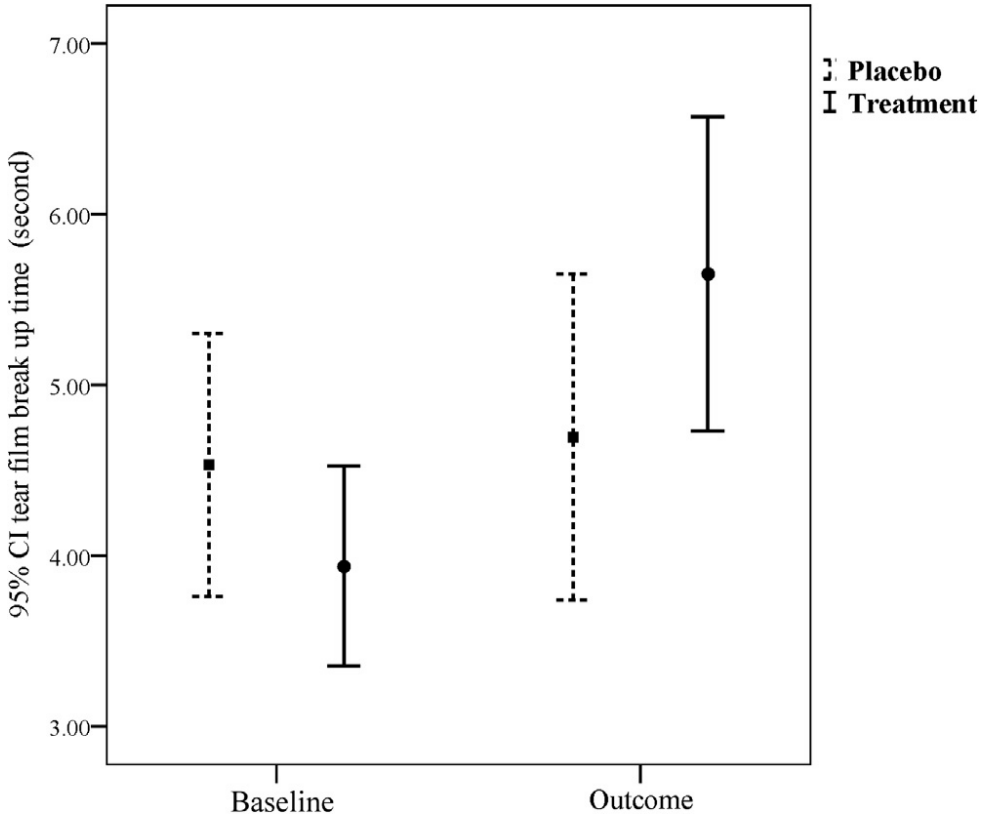
Methods: The treatment group received 2 capsules of omega-3 (each containing 180 mg eicosapentaenoic acid [EPA] and 120 mg docosahexaenoic acid [DHA]) daily for 30 days, and the placebo group received 2 medium-chain triglyceride oil capsules daily for 1 month. The outcomes were measured 1 month after the intervention.

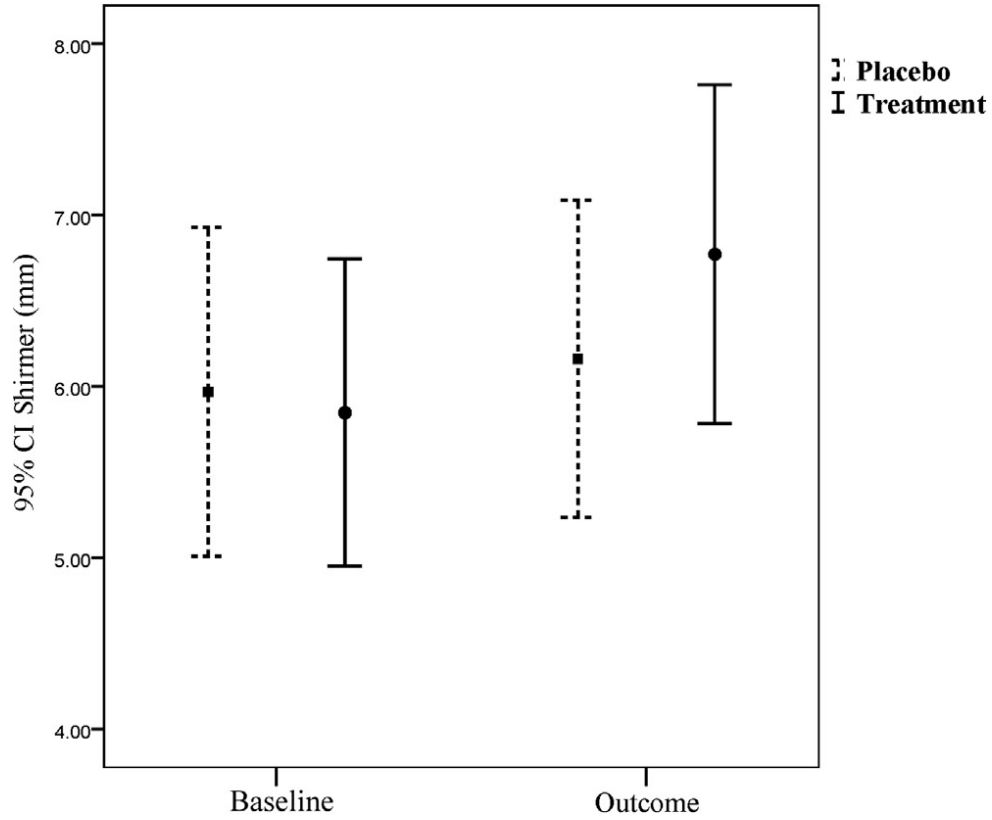
Main Outcome Measures: The primary outcome measure was an increase from baseline in TBUT at day 30. Secondary outcome measures were a decrease from baseline in the OSDI score and an increase in the Schirmer's score at day 30.

Results: In the placebo group, before the intervention, the mean TBUT, OSDI, and Schirmer's scores were 4.5 ± 2.1 seconds, 36.4 ± 13.8, and 6.0 ± 2.6 mm, respectively, and 1 month later were 4.7 ± 2.6 seconds, 37.6 ± 13.5, and 6.2 ± 2.5 mm, respectively. In the treatment group, these values were 3.9 ± 1.7 seconds, 38.7 ± 16.5, and 5.8 ± 2.5 mm before the intervention and 5.67 ± 2.6 seconds, 29.3 ± 15.9, and 6.8 ± 2.8 mm after the

SUPLEMENTOS

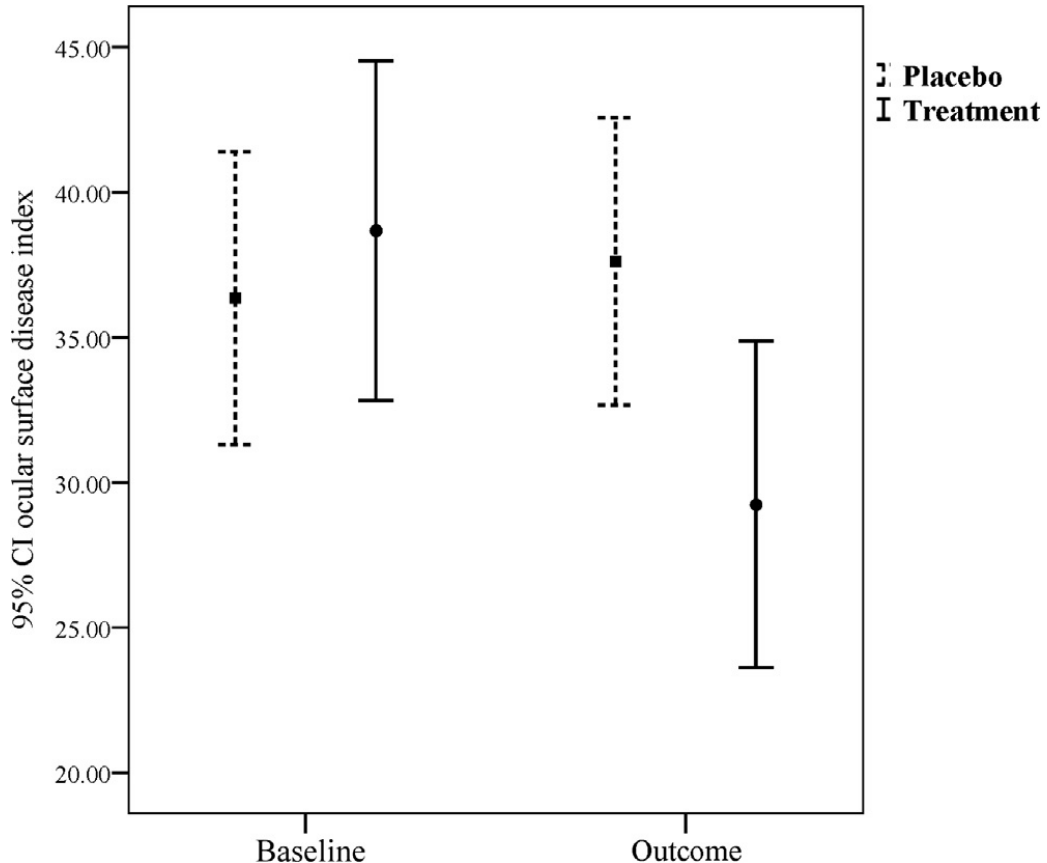
Short-term Consumption of Oral Omega-3 and Dry Eye Syndrome





SUPLEMENTOS

Short-term Consumption of Oral Omega-3 and Dry Eye Syndrome



SUPLEMENTOS

Clinical Interventions in Aging

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ORIGINAL RESEARCH

A randomized, double-masked study to evaluate the effect of omega-3 fatty acids supplementation in meibomian gland dysfunction

This article was published in the following Dove Press journal:
Clinical Interventions in Aging
29 August 2013
Number of times this article has been viewed

Andrea Oleñik[1]
Ignacio Jiménez-Alfaro[1]
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Ignacio Mahillo-Fernández[2]

[1]Department of Ophthalmology, Jiménez Díaz Foundation, Madrid, Spain; [2]Department of Statistics, Jiménez Díaz Foundation, Madrid, Spain

Background: Dysfunction of the meibomian gland (MG) is among the most frequent causes of ophthalmological symptoms. The inflammation seen in meibomian gland dysfunction (MGD) is part of its pathogenesis, and evidence of the antioxidant-inflammatory properties of omega-3 fatty acids suggests this to be an appropriate treatment for MGD.

Objective: We aimed to assess the effectiveness of omega-3 fatty acids versus placebo, in improving the symptoms and signs of MGD.

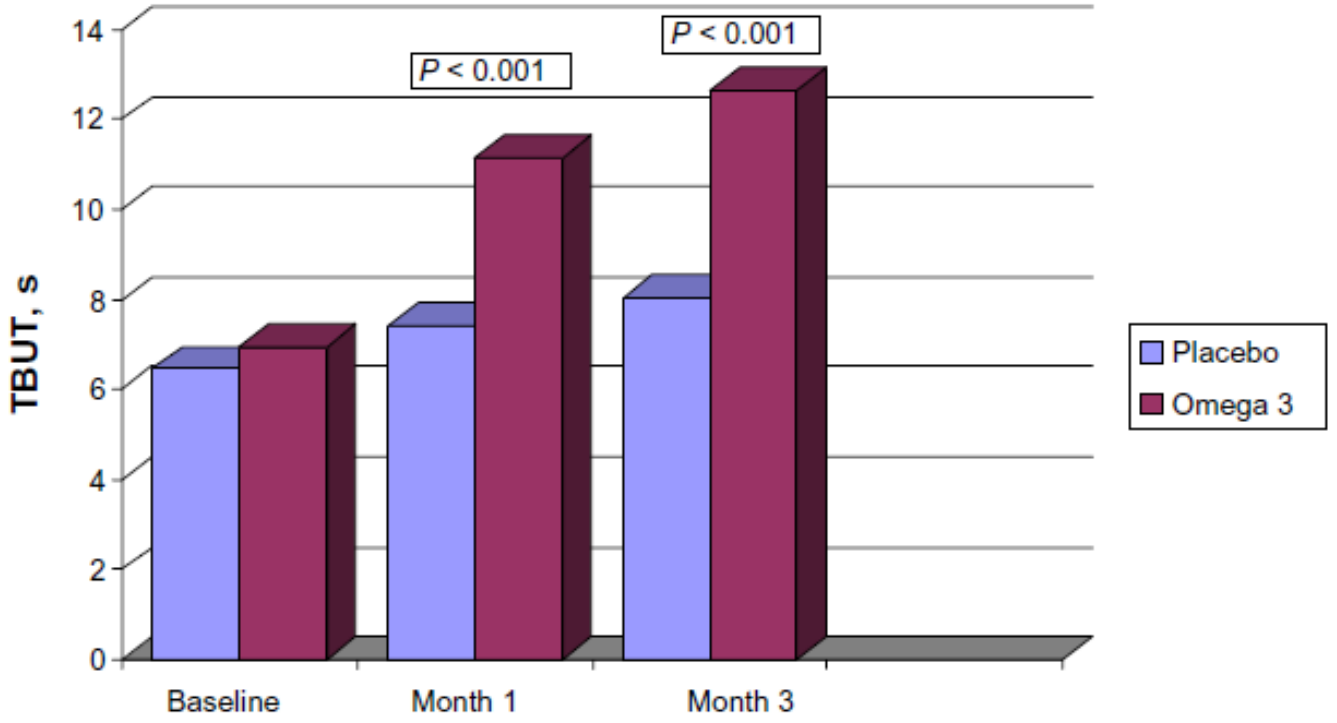
Methods: We conducted a randomized and double-mask trial of 3 months duration. We enrolled 61 patients who presented with symptomatic MGD and no tear instability (defined as tear breakup time [TBUT] <10 seconds). Participants were randomly assigned to two homogeneous subgroups. For patients in group A, the study treatment included cleaning the lid margins with

SUPLEMENTOS

Table 2 Composition of Brudysec 1.5 g (Brudy Lab SL, Barcelona, Spain), per capsule

Nutrient	Amount
DHA	350 mg
EPA	42.5 mg
Vitamin A	133.3 µg
Vitamin C	26.7 mg
Vitamin E	4 mg
Tyrosine	10.8 mg
Cysteine	5.83 mg
Glutathione	2 mg
Zinc	1.6 mg
Copper	0.16 mg
Manganese	0.33 mg
Selenium	9.17 µg
DPA	30 mg

Abbreviations: DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; EPA, eicosapentaenoic acid.



SUPLEMENTOS

Clinical Ophthalmology

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ORIGINAL RESEARCH

Effectiveness and tolerability of dietary supplementation with a combination of omega-3 polyunsaturated fatty acids and antioxidants in the treatment of dry eye symptoms: results of a prospective study

This article was published in the following Dove Press journal:
Clinical Ophthalmology
6 January 2014
Number of times this article has been viewed

Andrea Oleñik

On behalf of the Dry Eye Clinical Study Group (DECSG)

Ophthalmology Department

Background: We assessed the effectiveness and tolerability of a dietary supplement based on the combination of omega-3 essential fatty acids and antioxidants on dry eye-related symptoms.
Methods: A total of 905 patients (72% women, median age 60 years) with dry eye syndrome and using artificial tears to relieve symptoms participated in an open-label prospective intervention study. They were recruited during a routine ophthalmological appointment. Patients were instructed to take three capsules/day of the nutraceutical formulation (Brudysec® 1.5 g)

SUPLEMENTOS

Table 1 Composition of Brudysec® 1.5 g

Composition	Per capsule	% recommended daily amount	Per three capsules	% recommended daily amount
Concentrated oil in ω-3 fatty acids	500 mg		1500 mg	
TG-DHA 70%	350 mg	–	1050 mg	–
EPA 8.5%	42.5 mg	–	127.5 mg	–
DPA 6%	30 mg	–	90 mg	–
Vitamins				
Vitamin A (retinol)	133.33 µg RE	16.66	400 µg RE	50
Vitamin C (ascorbic acid)	26.7 mg	33	80 mg	100
Vitamin E (d-α-tocopherol)	4 mg TE	33	12 mg α–TE	100
Essential trace elements				
Zinc	1.6 mg	16.6	5 mg	50
Copper	0.16 mg	16.6	0.5 mg	50
Magnesium	0.33 mg	16.6	1 mg	50
Selenium	9.17 µg	16.6	27.5 µg	50
Other components				
Tyrosine	10.8 mg	–	32.5 mg	
Cysteine	5.83 mg	–	17.5 mg	
Glutathione	2 mg	–	6 mg	

Note: The percentage recommended daily amount of all nutrients is 250 mg of DHA (Regulation [EU] No. 432/2012 of the European Parliament and of the Council, of 16 May 2012).[23] Brudysec®; Brudy Laboratories, Barcelona, Spain.
Abbreviations: TG-DHA, triglyceride bound docosahexaenoic acid; EPA, eicosapentaenoic acid; DPA, docosapentaenoic acid; RE, retinol equivalents; TE, tocopherol equivalents.

SUPLEMENTOS

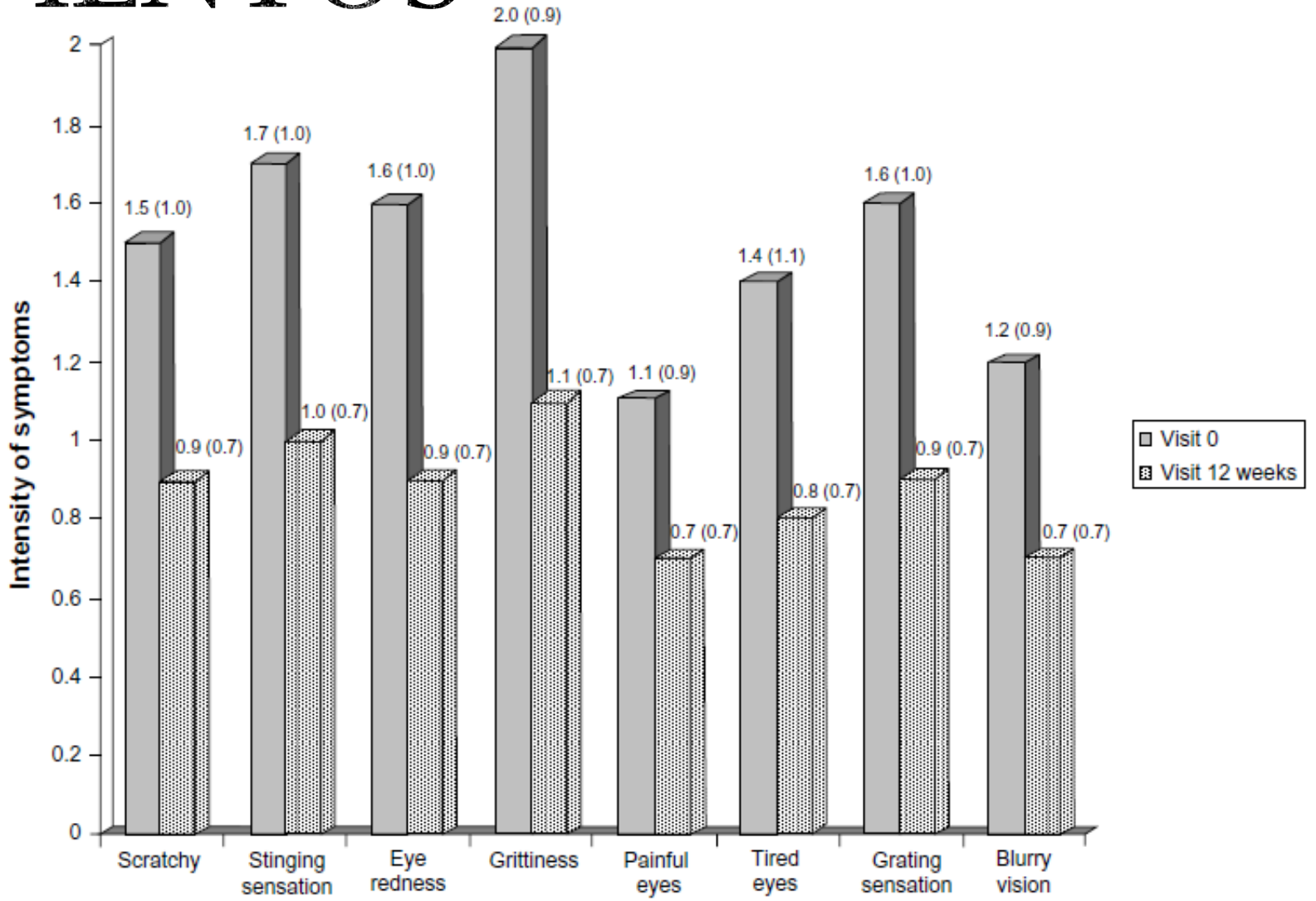

Figure 1 Changes in individual symptoms of dry eye before and after 12 weeks of treatment with Brudysec® 1.5 g.
Note: Data expressed as mean and standard deviation ($P<0.001$ for all comparisons). Brudysec®; Brudy Laboratories, Barcelona, Spain.

SUPLEMENTOS

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Curr Eye Res. 2014 Feb 21. [Epub ahead of print]

Effects of Eye Drops Containing a Mixture of Omega-3 Essential Fatty Acids and Hyaluronic Acid on the Ocular Surface in Desiccating Stress-induced Murine Dry Eye.

Li Z[1], Choi JH, Oh HJ, Park SH, Lee JB, Yoon KC.

Author information

Abstract

Abstract Purpose: To investigate the efficacy of the topical application of omega-3 essential fatty acids (EFAs) and hyaluronic acid (HA) mixtures in a mouse model of experimental dry eye (EDE). Methods: Eye drops consisting of 0.1% HA, 0.02%, or 0.2% omega-3 EFAs alone and mixture of 0.02%, or 0.2% omega-3 EFAs and 0.1% HA were applied in desiccating stress-induced murine dry eye. Corneal irregularity scores and fluorescein staining scores were measured 5 and 10 days after treatment. Levels of interleukin (IL)-1β, -17, and interferon gamma-induced protein (IP)-10 were measured in the conjunctiva at 10 days using a multiplex immunobead assay. The concentrations of hexanoyl-lys (HEL) and 4-hydroxynonenal (4-HNE) in conjunctiva tissue were measured with enzyme-linked immunosorbent assays. Results: Mice treated with the mixture containing 0.2% omega-3 EFAs showed a significant improvement in corneal irregularity scores and corneal fluorescein staining scores compared with EDE, HA, 0.02% or 0.2% omega-3 EFAs alone, and 0.02% omega-3 EFAs mixture-treated mice. A significant decrease in the levels of IL-1β, -17, and IP-10 were observed in the 0.2% EFAs mixture-treated group, compared with the other groups. In the mice treated with the mixture containing 0.2% omega-3 EFAs, the concentration of 4-HNE was also lower than the other groups. Although 0.2% omega-3 EFAs alone group also had a significant improvement in corneal irregularity scores and IL-17, IL-10, and 4 HNE levels compared with the other groups, the efficacy was lower than 0.2% omega-3 mixture group. Conclusions: Topically applied eye drops containing a mixture of omega-3 EFAs and HA could improve corneal irregularity and corneal epithelial barrier disruption, and decrease inflammatory cytokines and oxidative stress markers on the ocular surface. Topical omega-3 EFAs and HA mixture may have a greater therapeutic effect on clinical signs and inflammation of dry eye compared with HA artificial tears.

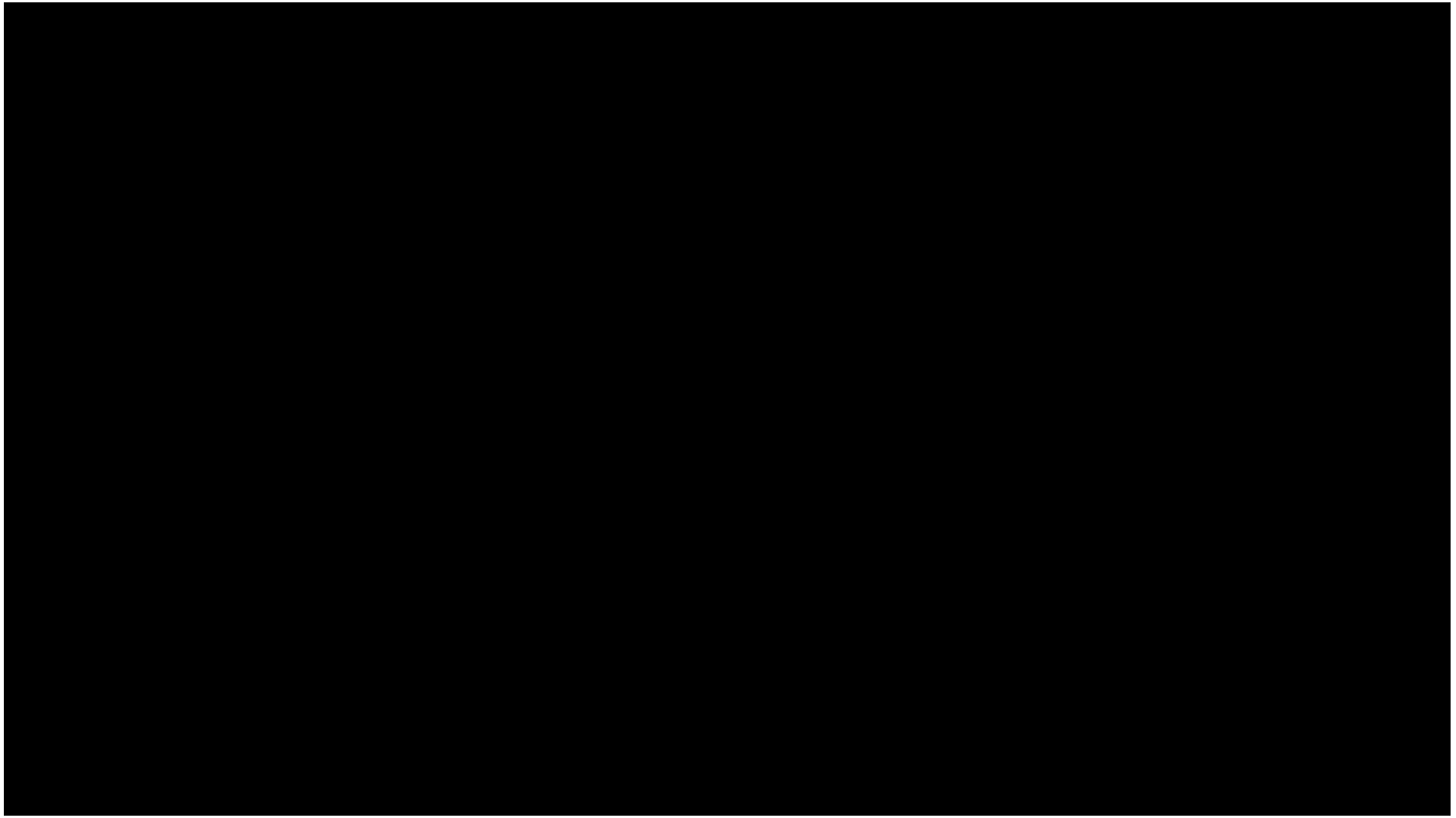
PMID: 24559509 [PubMed - as supplied by publisher]

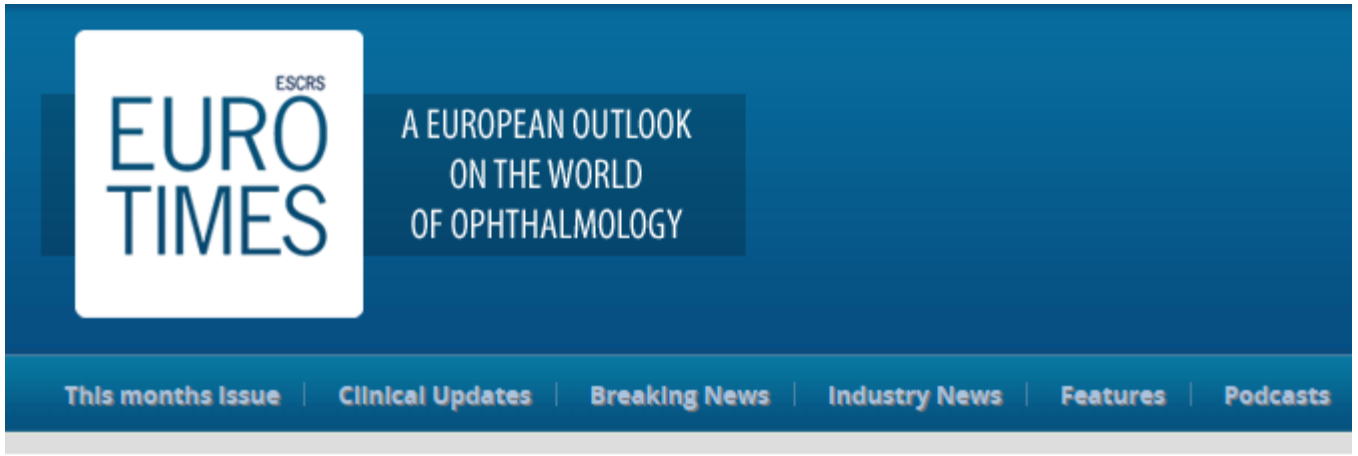
SUPLEMENTOS

- Omega 3 + AH melhor que cada um isoladamente
- Diminuição dos níveis de IL–10 e IL–17
- Melhoria da irregularidade corneana e da disrupção do epitélio

TECNOLOGIA ESPACIAL

TECNOLOGIA ESPACIAL





BLINK MORE

Key issue with treating dry eye is poor compliance with 'homemade remedies'

Priscilla Lynch

Posted in: 2014 | Mar | Cornea

Like 1k

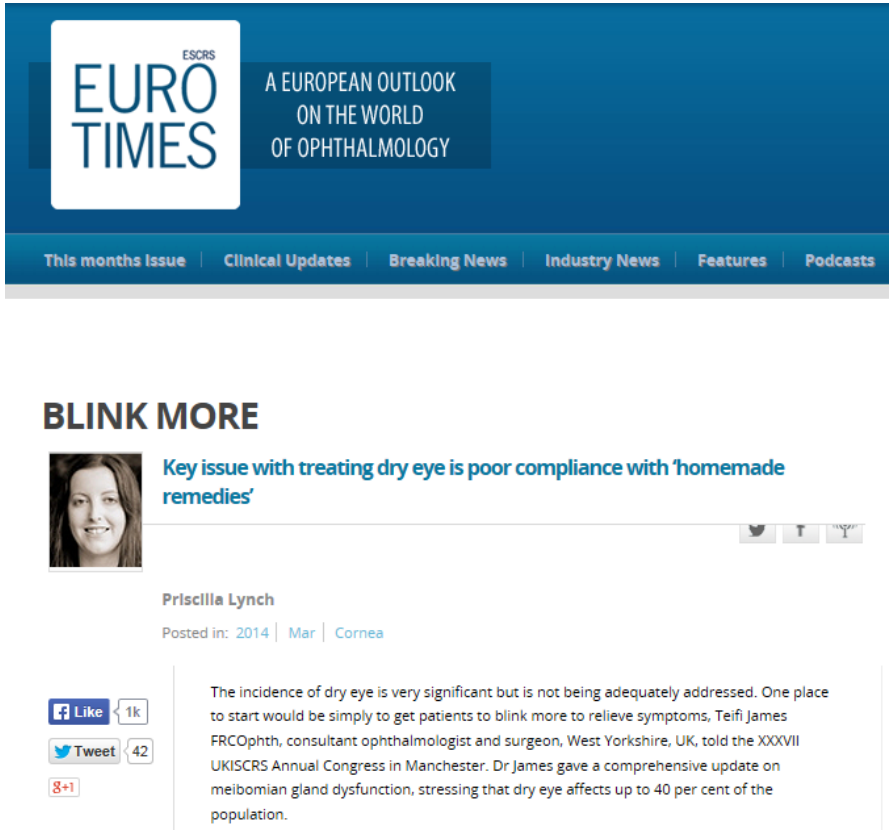
Tweet 42

8+1

The incidence of dry eye is very significant but is not being adequately addressed. One place to start would be simply to get patients to blink more to relieve symptoms, Teifi James FRCOphth, consultant ophthalmologist and surgeon, West Yorkshire, UK, told the XXXVII UKISCRS Annual Congress in Manchester. Dr James gave a comprehensive update on meibomian gland dysfunction, stressing that dry eye affects up to 40 per cent of the population.

- He said most ophthalmologists find the condition an "irritation" and that it is a "lottery" for patients to find a clinician who is interested in treating it. "About 90 per cent of dry eye is evaporative. Sjogren's syndrome is actually quite rare, and most of the time it is lipid layer issues

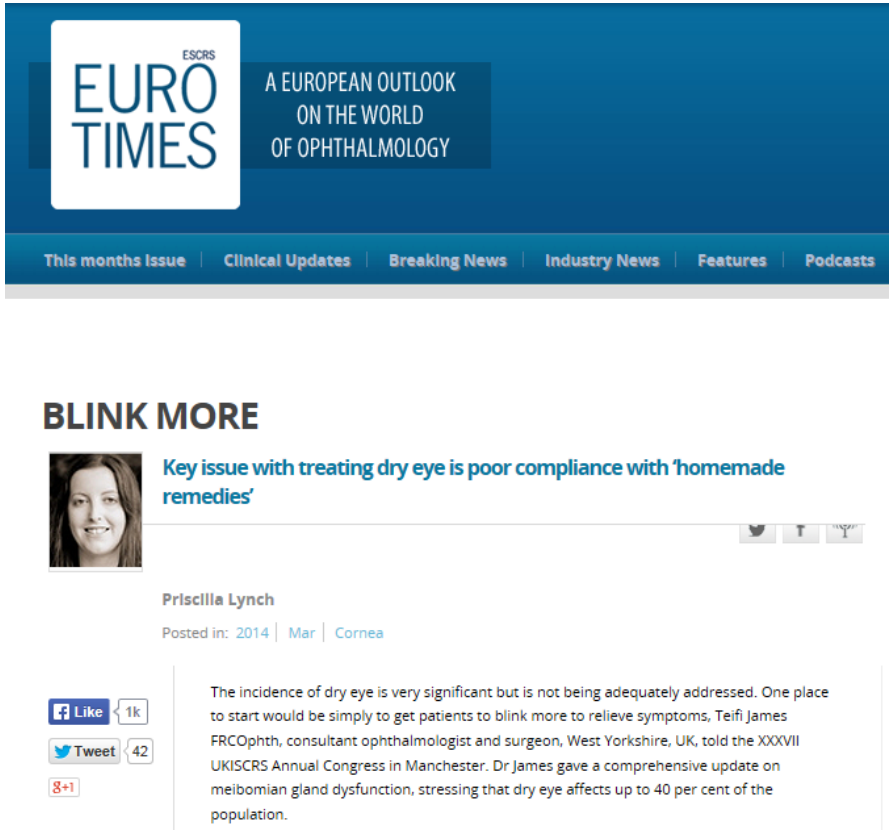
- Dr James confirmed that patients with meibomian gland dysfunction clearly do not blink enough. Most people nowadays spend far too much time staring intently at computer and TV screens. "Everybody is spending hours a day in close attentive gaze and this is farming meibomian gland dysfunction. People really do not realise how little they blink,"



- Quoting a blinking rate data study he conducted with 118 Scottish clinicians, Dr James said the average number of blinks over a 30–second period when talking was 15 while when reading or in close attentive gaze the average number was just four, with 16 people not blinking at all, 15 only blinked once and 14 blinked twice

- noting that about one third of dry eye symptoms would disappear if patients blinked more.

- Dr James said there is now compelling clinical data that omega–3 supplements are very helpful in addressing dry eye. Good eye hygiene is also key, Dr James noted, adding there are now plenty of good quality lid wipes available from opticians, as well as lubricant drops. He dismissed the common treatment of bathing the eyes with baby shampoo diluted in warm water as ineffective, confusing, unscientific, with poor compliance.



- Blocked eyelid glands are helped by warmth, he acknowledged, but said the classic approach of using warmed flannels is ineffective, because to work the temperature must remain at about 40 degrees, as solid meibomian secretions melt at 39 degrees. To address this issue, Dr James created his own heated eye pad, which would remain above this temperature for about 10 minutes. He consequently set up the EyeBag Company Ltd in April 2004, which sells the MGDRx EyeBag for the treatment of meibomian gland dysfunction. There are also other heated eye pads on the market

FIM

OBRIGADO PELA ATENÇÃO

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