

# LIGHT ON A NEW TREATMENT FOR DRY EYE DISEASE AND POST BLEPHAROPLASTY

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## NO CONFLICT OF INTEREST

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# INTRODUCTION

- Dry evaporative syndrome (MGD)
  - 30% of the general population
  - Reference treatment = Eyelids care
    - Poor observation
- Cataract surgery
  - Dry **eye** syndrome in post-op by MGD decompensation
  - Dry **eye** syndrome in post-op = Source of non-satisfaction

# NEW THERAPIES

- Intense Pulsed Light :
  - Proven effective in the treatment of MGD <sup>1,2,3</sup>
  - Good **tolerance** <sup>1,3</sup>
- EYE-LIGHT® :
  - COMBINED treatment
  - IPL + Photobiomodulation

<sup>1</sup> Vora, Gargi K.; Gupta, Preeya K. Intense pulsed light therapy for the treatment of evaporative dry eye disease. Current Opinion in Ophthalmology: July 2015 - Volume 26 - Issue 4 - p 314–318

<sup>2</sup> Vegunta, Sravanthi BS; Patel, Dharmendra MD; Shen, Joanne F. MD. Combination Therapy of Intense Pulsed Light Therapy and Meibomian Gland Expression (IPL/MGX) Can Improve Dry Eye Symptoms and Meibomian Gland Function in Patients With Refractory Dry Eye: A Retrospective Analysis. Cornea: March 2016 - Volume 35 - Issue 3 - p 318–322

<sup>3</sup> Gupta, Preeya K. et al. Outcomes of intense pulsed light therapy for treatment of evaporative dry eye disease. Canadian Journal of Ophthalmology - Volume 51 - Issue 4 - 249 - 253

# EYE-LIGHT® – Phase 1

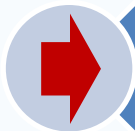
OPE®/IPL

Optimal Power Energy

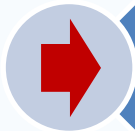
Intense Pulsed Light



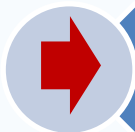
Polychromatic Light



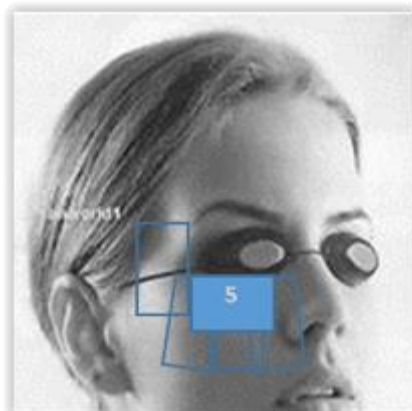
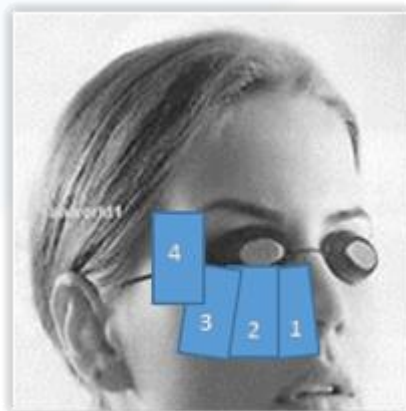
Thermic pulses



Stimulation of neurotransmitters

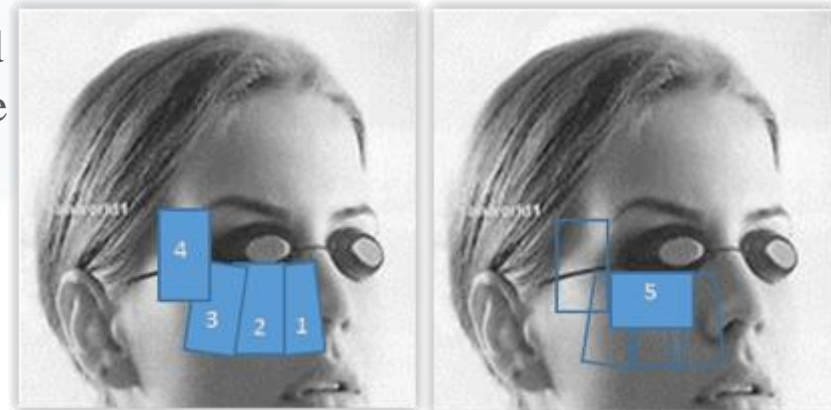


Increased contraction and secretion of meibomian glands



# EYE-LIGHT® – Phase 1

- Application on periorbital areas and cheekbones
- Fast and easy : 5 flashes  $\approx$  **2-3 min** minutes
- Integrated protection Filter  
 $\Rightarrow$  **no gel needed**
- Power determined according to the MGD grade and skin pigmentation thanks to a management software
- Treatment surface of 12 cm<sup>2</sup>



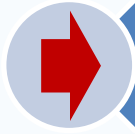
# EYE-LIGHT® – Phase 2

LIGHT  
MODULATION®/LLT

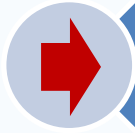
Low Level Light  
Therapy



Red wavelength  
(Photobiomodulation)



Endogenous heat on upper  
and lower eyelids



Stimulation of cellular  
metabolism (ATP)



Facilitates flow and  
increases cellular activity



# EYE-LIGHT® – Phase 2

- Easy: the mask is placed on patient's face (eyelids to be kept closed)
- Treatment of both eyelids
- Duration of 15 minutes
- **Not invasive**
- **No anaesthesia**





# INDICATIONS FOR EYE-LIGHT<sup>®</sup>

- **Dry evaporative syndrome (MGD) :**

Before and/or after Refractive surgery

Before and/or after Cataract surgery

Working environment with low humidity

Glaucoma patients undergoing treatment

Contact lens users

PC, Smartphones, Tablets extensive users

Long hours drivers

- **Other applications available**



# CONTRAINDICATIONS

- Epilepsy
- Pregnancy
- Metal implants
- Photosensitivity or photosensitizing treatments
- Active eye infection or inflammation

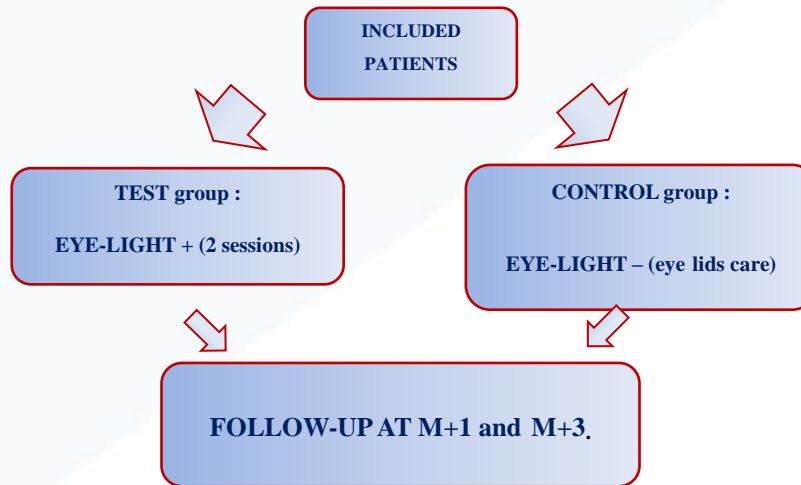


# EYE-LIGHT® TRIALS AT CHU DE LYON



# MATERIALS AND METHODS

- 2 Pilot Studies, monocentric ( Edouard Herriot Hospital ), Comparative and prospective
- From December 2017 to April 2018
- Efficacy & tolerance of EYE-LIGHT® treatment in 2 situations:
  - patients with MGD;
  - post-cataract surgery



# INCLUSION

- Dry eye syndrome : **OSDI  $\geq 12$**
- **Meibomian dysfunction** / infrared meibographie
- Normal **Schirmer** test
- Follow-up  **$\geq 3$  months**
  - Population with medical treatment of MGD
  - or before **cataract** surgery (eye operated = eye included)

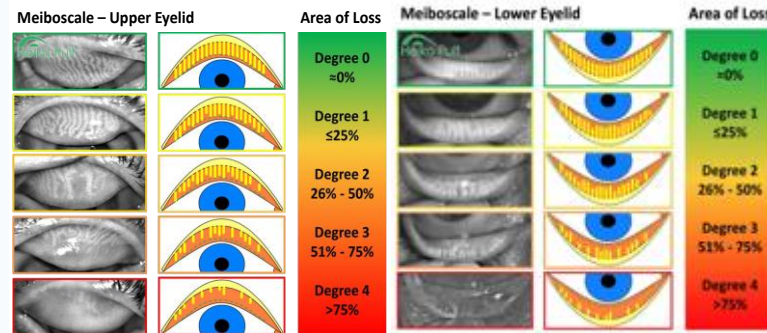
# CRITERIA OF JUDGEMENT

- **MAIN :**
  - OSDI score
- **SECONDARY :**
  - SPEED score
  - Visual acuity
  - IOP
  - IR Meibography
  - Oxford scale
  - IBI,  $\Delta 5\%$ LevelBUT, OPI

# IR MEIBOGRAPHY

## IBI/ $\Delta 5\%$ Level BUT/OPI

- CA800 Topographer TOPCON
- **IR meibography** ( Meiboscale)
- **$\Delta 5\%$  Level BUT** : BUT automatic result
- **IBI** : Inter Blink Interval (blink/minute)
- **OPI** : Ocular Protection Index =  **$\Delta 5\%$  Level BUT /IBI.**



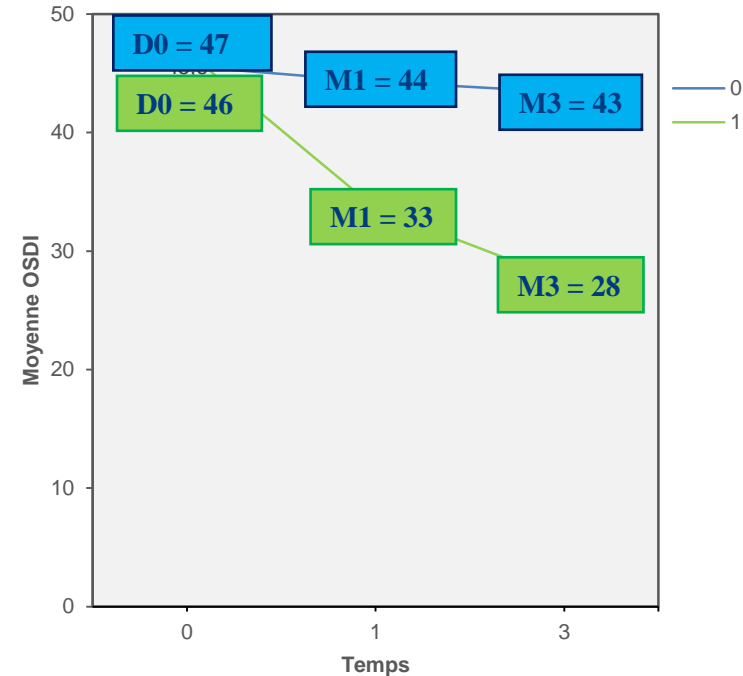
# RESULTS

- Control groups and EYE-LIGHT® comparable;
- Follow-up over 3 months;
- No effect over VA nor IOP;
- No unwanted side effects related to the treatment.



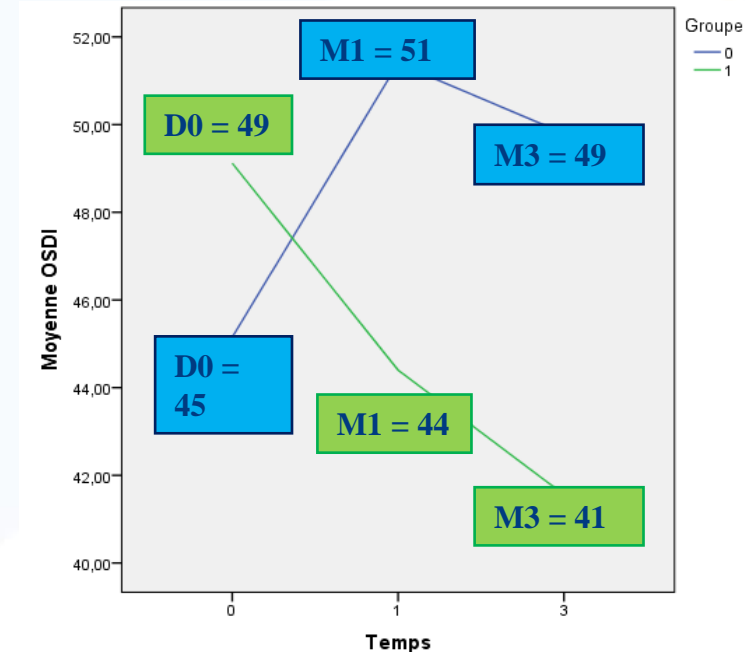
# SCORE OSDI – MGD PATIENTS

- **CONTROL group** :
  - OSDI at M1 = -2,5 +/- 4,4
  - OSDI at M3 = -6,3 +/- 5,2
- **EYE-LIGHT® group** :
  - OSDI at M1 = -12,9 +/- 8,5
  - OSDI at M3 = -18,6 +/- 11,4
- Significant difference **ΔOSDI-M1** ( $p < 0,001$ )
- Significant difference **ΔOSDI-M3** ( $p = 0,017$ )



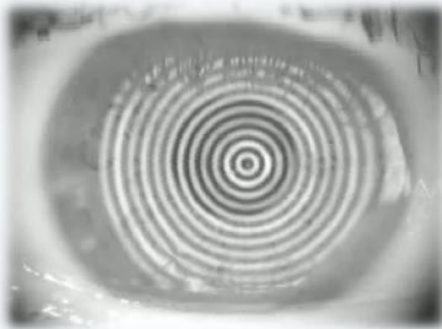
# OSDI SCORE - CATARACT

- **CONTROL group:**
  - OSDI at M1 = + 6 +/- 4
  - OSDI at M3 = +4 +/-3
  - Increase of dry eye sensation after surgery, more important after **one** month.
- **EYE-LIGHT® Group:**
  - Drop of OSDI at M+1 and M+3
  - No increase of dry eye sensation after surgery.
- Significant difference  **$\Delta$ OSDI-M1** (p=0,008)
- **Almost** significant difference  $\Delta$ OSDI-M3 (p=0,130)

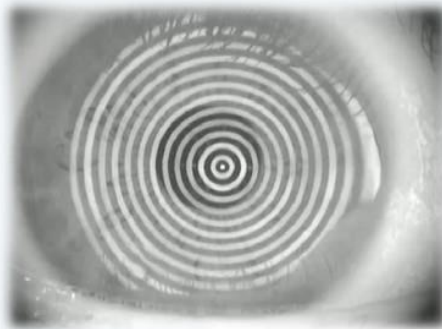


# SECONDARY CRITERIA

- Improvement of SPEED and BUT in both EYE-LIGHT® groups, MGD & post-cataract (p=0,001).
- Significant improvement of OPI (p=0,001).
- Reversibility of meibomian atrophy begins after 3 months.
- Treatment excellent tolerance.



Before Eye-Light



After Eye-Light

*Images taken from a short movie: not reflecting effective improvement*

# DISCUSSION

- PILOT study, therefore effective, to be increased and followed for a longer term but as of now:
  - EYE-LIGHT® is effective in the treatment of MGD;
  - Prevents the increasing sensation of dry eye after cataract surgery,
  - **Is much less restrictive for the patient than eyelids care.**

# OTHER EYE-LIGHT® APPLICATION



# EYE-LIGHT® & BLEPHAROPLASTY

- Low level light therapy widely used in esthetic dermatology .
- Many post-blepharoplasty adjuvant treatments :
  - Peeling
  - Laser CO2
  - Botuline toxines
  - **Hyaluronic acid**
  - NEW : photobiomodulation

# POST BLEPHAROPLASTY PROTOCOL

- Two wavelengths in 3 steps : D0, D1 and D3 post-op.
- **YELLOW MASK:**
  - Stimulation of cellular metabolism and lymphatic system;
  - Detoxifying action to relieve swelling and post-operative **edema**.
- **RED MASK :**
  - Accelerates and optimizes palpebral healing process by stimulating collagen and elastin **production**.

# TREATMENT EXAMPLE

- Comparison at D8, M1 and M3 post-blepharoplasty scarring without or with EYE-LIGHT® (n=10)
- Identical surgical procedure in both groups (same surgeon)
- Evaluation on a standardized scale: Manchester Scar Scale (MSS)
- **Best MSS score at Day 8 and M1 for the EYE-LIGHT® Group.**





# CONCLUSIONS

## ➤ **EYE-LIGHT® :**

- Improving life quality criteria of OSDI and SPEED in the treatment of MGD and after cataract surgery.
- Faster skin healing after blepharoplasty.
- Excellent **tolerance**.

## ➤ **EYE-LIGHT® BENEFITS:**

- Immediate effect
- Both eye lids treated
- Automatique and fast treatment
- Affordable price and low cost of consumables
- Several different applications
- Other example: post-LASIK treatment

*THANK FOR THE ATTENTION*

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