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EYECRYL™ PLUS NATURAL HD

NATURAL YELLOW ASPHERIC
HYDROPHOBIC SERIES

GLISTENING FREE • GLISTENING FREE •

MICS
Compatible

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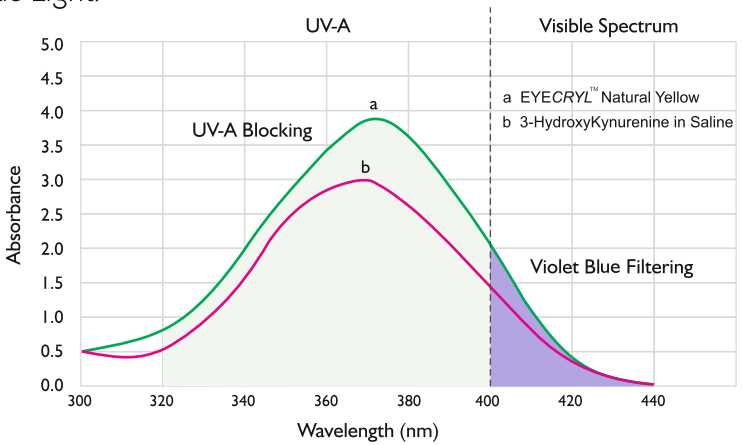
A BREAKTHROUGH IN HYDROPHOBIC IOL TECHNOLOGY - NO GLISTENINGS

- Controlled surgical manipulation
- Enhanced bio-adhesion
- Increased bio-mechanical stability
- Excellent folding & unfolding
- No fluid exchange with aqueous humor
- Resistant to environmental stress or environmental conditions like temperature, humidity & contamination and hence reduced risks of inflammation.

VIOLET-BLUE LIGHT FILTER: AN OPTIMAL SOLUTION FOR RETINA PROTECTION [17-19]

EYECRYL IOLs contain a unique covalently bound natural yellow chromophore, which contains the same UV-A blocking and Violet-Blue light filtering chromophore that is in the human crystalline lens. We use nature's own solution to the problem of protecting the Retina from harmful energetic light. The absorption spectrum of 3-Hydroxy Kynurenine (Figure 5) shows that this natural compound is an excellent UV-A blocker with a secondary purpose of filtering Violet-Blue Light. This compound and it's Beta Glucoside derivatives are nature's primary protection for UV-A and Violet-Blue Light.

Thus, EYECRYL NATURAL YELLOW IOLs provide Violet-Blue light filtering similar to a young natural crystalline lens and without altering color perception & contrast sensitivity.



Comparison of 3-HydroxyKynurenine in Saline versus EYECRYL™ Natural Yellow IOL

IMPROVEMENT IN SCOTOPIC VISION [14-16]

Scotopic vision is the vision of the eye under low light conditions. In the human eye, cone cells are non-functional in low light. Scotopic vision is produced exclusively through rod cells which are most sensitive to wavelengths of light around 498 nm (Blue-Green). The below mentioned graph shows that the quality of the scotopic vision is at its peak for the visible spectrum ranging from 450 nm to 550 nm. The quality of scotopic vision decreases by filtering healthy Blue Light of 440 nm to 500 nm. Whereas, EYECRYL™ IOLs through it's unique Natural Yellow Chromophore filters 400 nm to 440 nm of Violet-Blue Light spectrum only, not to affect the quality of Scotopic vision.

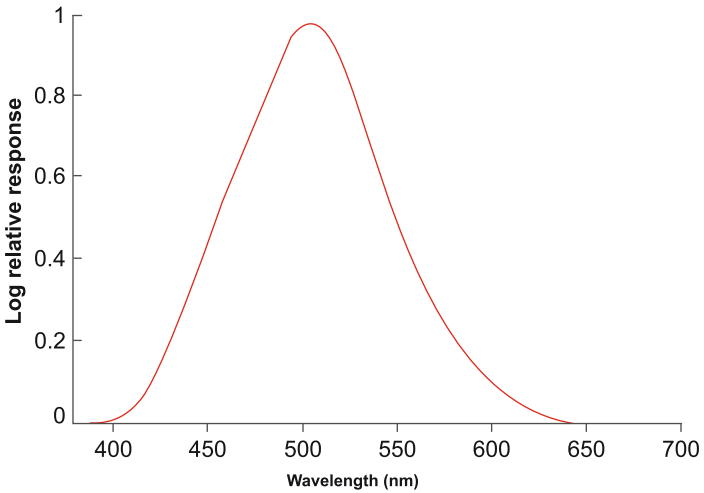


Figure 2: The CIE 1951 scotopicluminosity function.

CIRCADIAN RHYTHM [01-05]

- In humans, Melatonin is produced by the Pineal Gland, a small endocrine gland located in the center of the brain but outside the blood-brain barrier. The Melatonin signal forms part of the system that regulates the sleep-wake cycle by chemically causing drowsiness and lowering the body temperature.
- Production of Melatonin by the Pineal Gland is inhibited by light to the Retina and permitted by darkness. Its onset each evening is called the Dim-Light Melatonin Onset (DLMO).
- It is principally Blue Light, between 460 to 480 nm, that suppresses Melatonin, proportional to the light intensity and length of exposure.
- By filtering Blue Light ranging up to 500 nm, secretion of Melatonin increases & ultimately disturbs the Circadian Rhythm.
- Biotech Vision Care uses Natural Yellow Hydrophobic material from Benz Research & Development (US Patent 7,947,796) to manufacture EYECRYL NATURAL YELLOW Lenses which blocks UV-A & filters Violet-Blue spectrum of light ranging from 400nm to 440 nm and doesn't affect Circadian rhythm.

CHROMATIC ABERRATION: RELATION WITH ABBE NO. [06-13]

- ABBE No. is the significance of the Chromatic Aberration which could rise by the material used to manufacture the IOL.

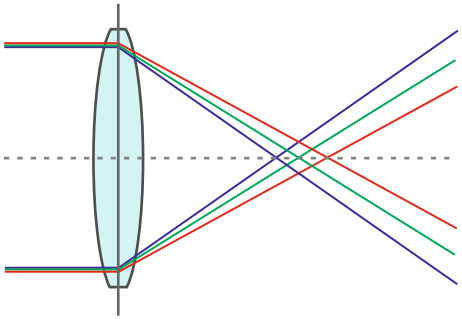


Figure 3:
Increased Chromatic Aberration through IOL material having lower ABBE No.

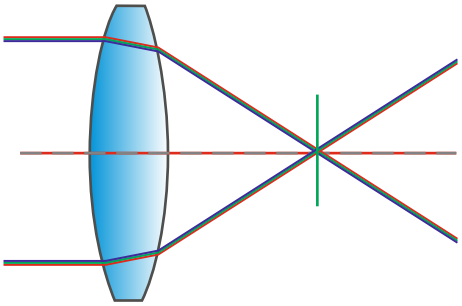


Figure 4:
Reduced Chromatic Aberration through IOL material having higher ABBE No.

- EYECRYL IOLs are manufactured using Natural Yellow Hydrophobic material having ABBE No. of 49. This results in the decreased amount of Chromatic Aberration & provides excellent visual outcomes post-operatively.

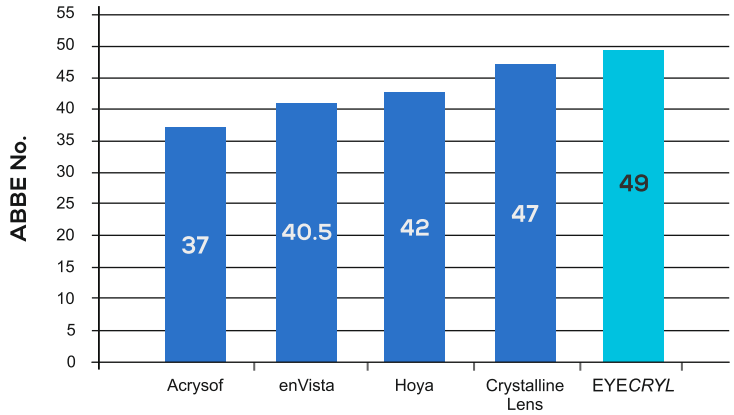


Figure 5: High ABBE No. indicates low degree of Chromatic Aberration

FEATURES

- IOL remains Glistenings-free
- Excellent refractive stability
- Excellent visual acuity for distance vision
- Negative spherical aberration compensates cornea's positive spherical aberratio
- Abbe no. 49 – reduces Chromatic Aberration

The simulated point spread function and image in the eye on Retinal plane with Negative Spherical Aberration IOL (Fig. 6), with Zero Spherical Aberration IOL (Fig. 7), and with Conventional Spherical IOL (Fig. 8)

Figure 6

Figure 7

Figure 8

CLINICAL RESULT (n=49 EYES)

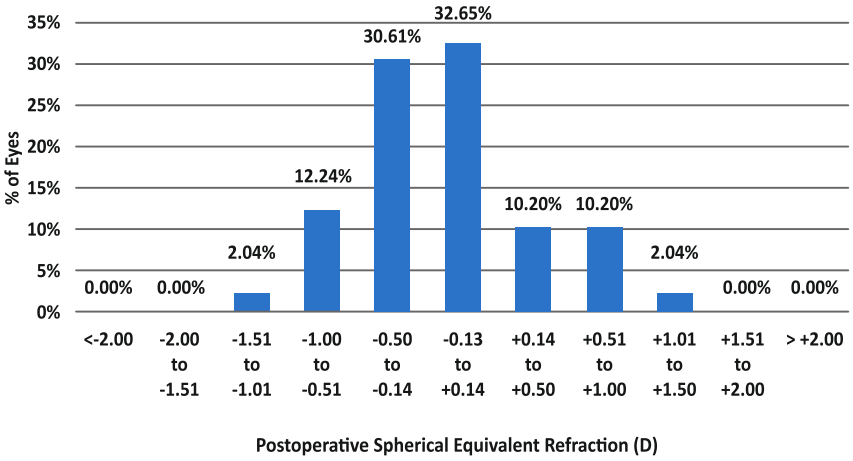
VISUAL OUTCOMES

Visual Acuity:- There was a statistically significant improvement in UDVA and CDVA. UDVA and CDVA were stabilized at the 1st month examination, and there was no significant difference between the 1st month and the 3rd and 6th month examinations

	Preoperative (n-49) Mean ± SD	1st Month (n-49) Mean ± SD	3rd Month (n-49) Mean ± SD	6th Month (n-49) Mean ± SD
UDVA (Decimal)	N/A	0.81 ± 0.20	0.83 ± 0.18	0.83 ± 0.19
CDVA (Decimal)	0.33 ± 0.15	0.98 ± 0.07	0.97 ± 0.08	0.97 ± 0.08

SPHERICAL EQUIVALENT

The mean spherical equivalent of the manifest refraction (SE) was significantly decreased from the preoperative examination to the 6th month examination. Mean SE was stable across the 1st, 3rd, and 6th months examinations, and there were no statistically significant differences between the postoperative examinations.



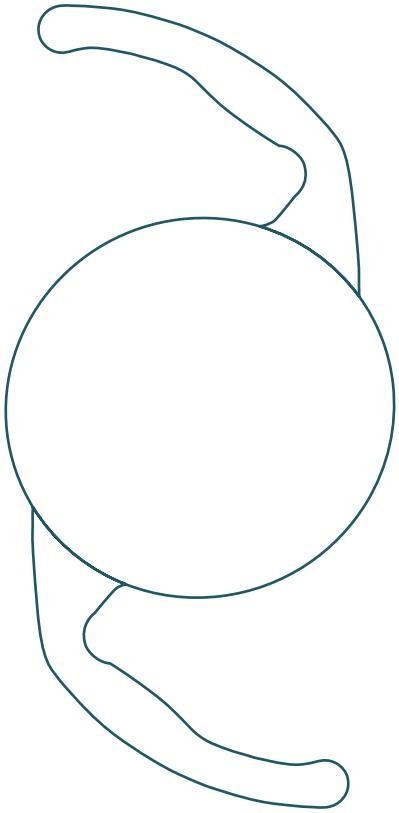
CONCLUSION

In conclusion, this preliminary study shows that ASHFY600 IOL provides excellent UDVA, CDVA and refractive stability.

SPECIFICATIONS

Model: ASHFY600

MATERIAL	Hydrophobic Acrylic containing Natural Yellow Chromophore
OPTIC TYPE	Single Piece, 360° Square Edge with Aspheric Optic
OPTIC SIZE	6.00 mm
OVERALL SIZE	13.00 mm
ANGULATION	0°
ACD	5.28
REFRACTIVE INDEX	1.48
RECOMMENDED ULTRASOUND A-CONSTANT	SRK-T 118.3
RECOMMENDED OPTICAL A-CONSTANTS	SRK – T 118.6 / SRK – II 118.9 / Holl 1 Const SF : 1.63 HOFFER Q ACD : 5.43 / HAIGIS a0:1.200, a1:0.40, a2:0.10 Barrett 1.67 / Hill-RBF 118.6 / Olsen ACD 4.47
DIOPTER RANGE	+5.0 D to +30.0 D (with 0.5 D steps)
IMPLANTATION SITE	Capsular Bag
STERILIZATION	Irradiation
SHELF LIFE	4 years from date of manufacture



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REFERENCES

01. Reiter RJ, Acuña-Castroviejo D, Tan DX, Burkhardt S (June 2001). "Free radical-mediated molecular damage. Mechanisms for the protective actions of melatonin in the central nervous system". Ann. N. Y. Acad. Sci. 939: 200-15.
02. Boutin JA, Audinot V, Ferry G, Delagrange P (August 2005). "Molecular tools to study melatonin pathway sand actions". Trends Pharmacol. Sci. 26 (8): 412-9. doi:10.1016/j.tips.2005.06.
03. European Medicines Agency. "Circadin, melatonin" (http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/human/medicines/000695/human_med_000701.jsp&mid=WC0b01ac0580d124). European Public Assessment Report (EPAR). European Medicines Agency. Retrieved 5 June 2013.
04. Richardson GS (2005). " The human circadian system in normal and disordered sleep". J Clin Psychiatry. 66Suppl 9: 3-9; quiz 42-3. PMID 16336035 (//www.ncbi.nlm.nih.gov/pubmed/16336035).
05. Sack RL, Lewy AJ, Erb DL, Vollmer WM, Singer CM (1986). "Human melatonin production decreases with age". J. Pineal Res. 3 (4): 379-88.
06. Negishik, Ohnuma K, Hirayama N, Noda T. Effect of chromatic aberration on contrast sensitivity in pseudophkic eyes. Arch Ophthalmol. 2001;119:1154-1158.
07. Cheryl Guttman Krader in Vienna, For ABBE No. EnVista "HYDROPHOBIC IOL - NOVEL material and design aim to bring optimized optical and anatomic performance", CATARACT & REFRACTIVE, EUROTIMES, Volume 16/17, ISSUE-12/1.
08. WILLIAM B. TRATTLER, MD, Optics, Visual Quality, and Acuity, REFRACTIVE SURGERY FEATURE STORY, CATARACT & REFRACTIVE SURGERY TODAY, APRIL 2010, Page 57-58.
09. George H.H. Beiko, BM, Bch, FRCSC Understanding Corneal Asphericity and IOLs. A review of the research into the factors that may impact the choice of an aspheric intraocular lens. Review of Ophthalmology ®, Page no 1-8.
10. Thibos LN, Bradley A, Zhang XX. Effect of ocular chromatic aberration on monocular visual performance. Optom Vis Sci. 1991 Aug; 68(8):599-607.
11. Harris WF, Evans T. Chromatic aberration in heterocentric astigmatic systems including the eye. Optom Vis Sci. 2012 Nov;89(11):e37-43.
12. Artal P, Manzanera S, Piers P, Weeber H. Visual effect of the combined correction of spherical and longitudinal chromatic aberrations. Opt Express. 2010 Jan 18;18(2):1637-48. doi:10.1364/OE. 18.001637.
13. Geun-young Yoon and David R. Williams. Visual performance after correcting the monochromatic and chromatic aberrations of the eye. J. Opt. Soc. Am. A/Vol. 19, No. 2/February 2002 page 266-275.
14. Foundations of Vision (http://foundationsofvision.Stanford.edu) (1995), Brian A. Wandell, Chapter 9 Color (https://www.stanford.edu/group/vista/cgi bin/FOV/chapter-9-color/).
15. Foundations of Vision (http://foundationsofvision.stanford.edu) (1995), Brian A. Wandell, Chapter 4Wavelength Encoding (https://www.stanford.edu/group/vista/cgi bin/VOV/chapter-4-wavelength-encoding/).
16. Foundations of Vision (http://foundationsofvision.stanford.edu) (1995), Brian A. Wandell, Chapter 3 The Photoreceptor Mosaic (https://www.stanford.edu/group/vista/cgi-bin/FOV/chapter-3-the-photoreceptor-mosaic/).
17. Rodrigo França de Espindola1, Marcony Rodrigues de Santhiago 1, Newton Kara-Júnior1Effect of aspherical and yellow tinted intraocular lens on blue-on-yellow perimetry. Arq bras Oftalmol. 2012;75(5):316-9.
18. Zhu X-f, Zou H-d, Yu Y-f, Sun Q, Zhao N-q (2012) Comparison of Blue Light-Filtering IOLs and UV Light-Filtering IOLs for Cataract Surgery: A Meta Analysis. PLoS ONE 7(3): e33013. doi: 10.1371/journal.pone.0033013
19. Penny Asbell, MD, FACS, MBA, SOM PRASAD, MS, FRCS(ED), FRCOPHTH, and Albert J. Augustin, MD. Blue and Violet Filtering IOLs, Cataract and Refractive Surgery Today Europe July/August 2008.

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