conferenceseries.com SciTechnol
15th International Congress on
Nilufer Koyluoglu, Int J Ophthalmic Pathol 2017, 6:4
DOI: 10.4172/2324-8599-C1-002

# VISION SCIENCE AND EYE

August 10-11, 2017 | London, UK

## The fluorescence ratıo, as a new parameter for long-term metabolıc control. What & when would you know?

**Nilufer Koyluoglu**
Ophthalmologist, Medical Retina Specialist in Liv Hospital International Istanbul, Turkey

Elevated glucose is the hallmark of diabetes. Advanced glycation end products (AGEs) are proteins that become glycated as a result of exposure to sugars. Protein glycation and formation of AGEs play an important role in the pathogenesis of diabetic complications. In blood glucose attaches to hemoglobin protein in red blood cells (RBCs). HbA1c is the ratio of glucose-bound to glucose-unbound red blood cells. Because RBCs turn over every 60-90 days, HbA1c is an extrapolated average of a person's blood glucose level over that same 60-90 day interval. These glucose molecules have the same affinity for collagen protein within the lens. The non-enzymatic, chemical bonding between glucose and lens proteins forms irreversible glycoprotein aggregates. AGEs accumulate in these proteins over a person lifetime. AGEs are yellow-brown and fluorescent proteins. Lens autofluorescence has been modified by the accumulation of AGEs and may have a clinical utility. Over 382 million people in the world have diabetes, 46% of the global diabetes population is undiagnosed. Up to 50% of diabetes is detected with a clinical complication, well after disease onset. Diabetes is the leading cause of blindness in 20 to 74 years old. 21-25 % of patients first diagnosed with type II diabetes have retinopathy. It is estimated the diabetic population will increase by 54%, while the number of ophthalmologists will increase by only 2%. Will present activities address the magnitude of the issues that are coming up? This massive problem requires a high-level solution. The fluorescent ratio can be an efficient parameter to non-invasively detect and monitor long-term metabolic control for all; this can be very important especially undiagnosed diabetes and pre-diabetes population.Studies of the autofluorescence of the human crystalline lens have established that lens autofluorescence intensity increases with the age of the subject and that lens autofluorescence is further increased in patients with diabetes mellitus. The transparency of the ocular media (cornea, aqueous and lens) provides a unique opportunity to shine an excitatory light source on fluorescent AGEs within the human lens and correlate that fluorescence with the degree of AGE deposition. The only technology available in the U.S. cleared by the U.S. Food and Drug Administration (FDA) for the non-invasive measurement of lens autofluorescence is the CLEARPATH DS-120™ was developed in partnership with The Joslin Diabetes Center at Harvard University and has been substantiated by 60 peers reviewed journal articles and validated over 3000 patients in 11 different clinical trial.The CLEARPATH DS-120™ accurately measures a person's lenticular fluorescence and reports if the result is at normal, high, or low limits versus age-adjusted normative data. Thus, since the glycation process in the lens has been reported to be irreversible, one can think of lens autofluorescence as a tool to obtain information about a person's glucose excursions over a lifetime. On the other side, lens autofluorescence measurement can identify patients with lens fluorescence lower than expected. Thus fluorescence ratio provides information on the mobility of the person, the calories they intake / the calories burned. This should be investigated by further studies to determine whether it will be an athletic performance indicator, for example in correlation to an athlete's pulse.The clinical data indicated that the fluorescence ratio could provide better discrimination between individuals with and without diabetes than fluorescence intensity. The HbA1c test is currently one of the best ways to check diabetes. If we think of fasting blood sugar and postprandial blood sugar as a snapshot photograph, then HbA1c as a fragmentary, fluorescein ratio can be considered as the whole film of life until cataract operation, it should be considered as the metabolic credit rating of the person. Noninvasive measurements of lens autofluorescence may have clinical utility for general health beyond diabetes and its complication

### Biography

She graduated from Istanbul University, Istanbul School of Medicine in 1997. She has completed her residency in Istanbul Universtiy, Cerrahpasa School of Medicine, Department of Ophthalmology in 2002. She has worked in Turkish Diabetes Hospital since 2002. She has held the position of Medical Retina Specialist and Deputy Chief Physician in Dünyagöz Hospital between 2005-2016. She coordinated the initiation of the long-term partnership of Orbis which is a branch of the World Health Organisation and Dünyagöz Hospital Group. She is the ophthalmology consultant of telemedicine systems of GSM operators in Turkey. She coordinated the bionic eye treatment initiation (Argus II Retinal Implant) in Turkey, also incorporating the Frankfurt World Eye Hospital in Germany as a scientific committee and board member of Dünyagöz Foundation and Turkish Medical Academy. She initiated the projects Dunyadiyabet and Athletic Eye Health in order to contribute to 'Retina Awareness' as a clinical scientist to prevent the loss of resources that would be used for keeping patients healthy. She has been invited contribute to the Turkish Olympic Committee and is working with the Turkish Paralympic Committee. She aims that the eye would be a symbol for the preventive medicine globally, starting from athletes.

niluferkoyluoglu@gmail.com