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MacuScope Detects Early Pigment Density Changes in the Macula

An earlier start to AMD therapy with ocular vitamins or change in diet can help increase macular pigment density, expert says.

By Bob Kronemyer, OSN Correspondent

The MacuScope™ from MacuChek is an easy-to-use, accurate instrument that detects low levels of macular pigment, one of the potential risk factors for age-related macular degeneration (AMD), according to a user familiar with the device. The device is based on flicker photometry.

"Flicker photometry is perhaps the best validated method of measuring macular pigment density," said Richard A. Bone, Ph.D., a professor of physics, with a specialty in biophysics, at Florida International University in Miami. "Up until now, early detection of low pigment density has not been available to the general medical community."

High luminance

Dr. Bone has considerable experience with different flicker photometer designs, and finds the MacuScope the best and easiest to use.

"The MacuScope uses a conventional light source – a quartz halogen lamp – to provide relatively bright stimulus. The task of locating the flicker null point is a lot easier if you're using high luminance," he said. "For the novice, it is important to have an instrument that allows you to locate the null point easily, without confusion. The MacuScope seems to do this very well."

He said the measurement of the macular pigment optical density in one eye takes less than one minute.

"The macular pigment optical density is a number that typically ranges from 0 to 1, with an average of about 0.4," Dr. Boone said. "In a novice subject, the MacuScope can easily detect within plus or minus 0.05, which translates roughly into a 10% error."

Dr. Bone was first author of an article on heterochromatic flicker photometry (HFP) that appeared last year in Archives of Biochemistry and Biophysics.

"We described heterochromatic flicker photometry as a method of measuring macular pigment. Measurement of the macular pigment optical density by HFP is accomplished by viewing a small circular stimulus that alternates between a test wave that is absorbed by the macular pigment, and a reference wavelength that is not absorbed," he said. "Typically, the absorbed wavelength is blue (460 nm), and the nonabsorbed wavelength is green (540 nm). The distribution of macular pigment optical density in the retina can be determined with HFP using a series of annular stimuli of different diameters."

AMD therapy

"We can definitely track changes in macular pigments resulting from supplementation," Dr. Bone said. "The risk of AMD appears to be reduced by diets rich in xanthophylls, for those with high serum levels of lutein and zeaxanthin, and those with high macular pigment levels."

Dr. Bone was co-author of an article in Archives of Biochemistry and Biophysics in 2001 that discussed lutein, zeaxanthin and the macular pigment.

He said the macular cartonenoid levels increase from supplementation with lutein and zeaxanthin. Patients with particularly low macular pigment can change their diet or add a supplement to encourage an increase in macular pigment, he said.

"There are more than 30 million people worldwide afflicted with AMD," said David S, Segel, founder, president and CEO of MacuChek. "According to the National Eye Institute, AMD is expected to reach epidemic proportions within the next 10 to 20 years. The MacuScope offers people a reasonable chance to determine one of the contributing factors of AMD, possibly a major contributing factor to the disease."

The ability of the device to detect low macular pigment early allows ocular supplements to be prescribed earlier for re-pigmenting the macula, he said, which may restore healthy vision, especially in patients under 55 years,.

Mr. Segel said the MacuScope is "extremely accurate".

The device debuted at the International Vision Expo West in Las Vegas in September and will be exhibited at this year's annual meeting of the American Academy of Ophthalmology in Chicago.,

"Flicker photometry has been a research instrument for nearly 20 years now," Mr. Segel said. "I think it is very important to place this technology into the hands of the eye care profession."

For Your Information

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