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Tinsley, which was founded in 1904, is now part of the Hartest Precision Instruments group and has been supplying specialist instruments for over 50 years. It is a market leader in field of vision analysers and a long-standing supplier to the Moorfields Eye Hospital.

For more information about the Hartest group visit:
www.h-pi.co.uk

Dr Ian Murray, Faculty of Life Sciences, University of Manchester.

ARMD was investigated by the BBC in its recent science series The Truth About Food, during a programme produced in collaboration with the Faculty of Life Sciences, University of Manchester and featuring one of the Mpod's inventors Dr Ian Murray.

The programme highlighted the growing prevalence of ARMD and showed that it is possible to increase the density of the macular pigment by following a spinach rich diet and tackling other lifestyle issues. Spinach, like many green vegetables contains high levels of lutein.

Visit: www.ARMD.org.uk
for more information about lutein and ARMD.

MPOD TECHNICAL SPECIFICATION

1.0 TYPE
Computerised device capable of measuring Macular Pigment Optical Absorption Density.
Target viewing distance set at infinity.
Background and Target luminance set at approximately 250cd/m2.

2.0 STIMULI
Integrated output from LEDs at 470nm and 540nm and White light LEDs.
Stimulus target angular subtense 1degree.

3.0 PERIPHERAL FIXATION TARGETS
Integrated output from LEDs at 650nm.
Angular subtense 3degrees.
Target offsets minimum +/- 6degrees.

4.0 PATIENT UNIT INPUTS / OUTPUTS
Patient Unit
USB 1.1 Type B Connector for PC connection.
Mains Input Conector (IEC320)
Patient response button (hard wired)

5.0 PATIENT UNIT DIMENSIONS
300 x 230 x 300 - 350 variable mm (L x D x H)

6.0 PATIENT UNIT WEIGHT
4.4 kg

7.0 ELECTRICAL SPECIFICATION
Mains input 100–240v 50/60Hz universal input.

8.0 CLASSIFICATION
Mains operated
Class 1
Type B Applied Part.
Continuous operation
Equipment not suitable for use in presence of flammable anaestetic mixtures with air or oxygen or nitrous oxide.
Ordinary equipment without protection against ingress of water.

CE and FDA Approved

TINSLEY IM|POD™

The world's first fully portable, low cost macular pigment screener

FEATURES AND BENEFITS

- Low cost – much cheaper than earlier ARMD screening techniques
- Small footprint – far smaller than anything else on the market
- Easily portable – ideal for small clinics, hospitals and home visits
- Early detection of potential sight loss
- Cuts healthcare costs by detecting condition early
- Uses latest in electronics and LED flicker photometry
- Innovative application of tried and tested scanning approach
- Designed by professional opthalmists
- Monocular – the most accurate method for detection
- Can be used by general public – no detailed training required
- Fast and accurate reporting of condition
- Links to Windows PC for ease of use

A new approach to the measurement of macular pigment in the eye.

The MPOD measures a compact:
300mm x 230mm x 300-350 variable mm (L x D x H)
and weighs just 4.4 kgs.

The Department of Optometry and Neuroscience at the University of Manchester, in partnership with British manufacturer Tinsley, has achieved a breakthrough in Macular Pigment Screening.

The Tinsley M|POD is an easy to use device that allows optometrists to detect low levels of Macular Pigment which may lead to potential vision loss caused by Age Related Macular Degeneration (ARMD). Far smaller and easier to use than any other similar screening equipment, the M|POD makes affordable macular pigment screening available to every clinic and practitioner.

Tinsley MPOD

Age-related macular degeneration (ARMD) is the most common cause of vision loss in people over 50 and its prevalence increases with age.

There is a growing awareness of the disease, the need to measure the risk of getting it and how to take preventative action.

As the UK population ages, the condition is expected to become more prevalent creating a heavy financial burden on healthcare services.

The macula is the central and most sensitive part of the retina at the back of the eye and macular pigment acts as an antioxidant and protects the retina from the potentially damaging effects of blue light – if the density of this pigment is reduced then the retina is made more vulnerable and more likely to gradually deteriorate. By catching those with low levels of macular pigment, the M|POD makes it possible to reduce their risk of long-term vision loss.

People with macular degeneration experience severely distorted vision and find it very hard to read and recognise faces. Eventually the condition can lead to total blindness. The density of the macular pigment has been shown to be linked to diet and to other lifestyle factors, including smoking.

Method

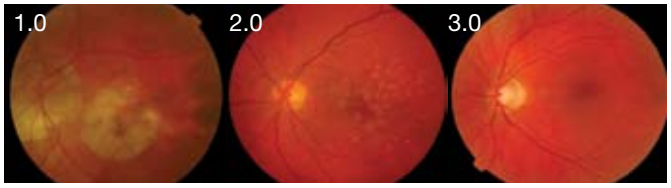
The scientifically proven technique for measuring the density of macular pigment, heterochromatic flicker photometry, has been available for over 30 years. The new Tinsley M|POD uses the same technology, but takes it onto the next stage by refining it and making it available in a more accessible package thanks to advances in LED lighting.

The approach adopted by the M|POD is far easier for patients to use than earlier versions of the technology. Instead of, as in conventional methods, observers having to set the point where flicker disappears or is minimised, the measurement consists of a series of button presses by the user in response to the appearance of flicker which makes it far easier for the subject and for the Optometrist to determine accurately the flicker thresholds.

The test consists of two stages. The observer's sensitivity to flicker is quickly determined in the first part of the test and the luminance contrast of two lights are normalised for that particular observer. In the main part of the test, the frequency of the blue (460nm) and green (570) lights is ramped down from a non visible fast flicker rate for a series of luminance ratios of the two lights resulting in a distinct curve from which the minimum flicker point is detected. The observer views the target and simply presses a button when flicker appears. The difference between the minima obtained from central and peripheral viewing determines the macular pigment optical absorption level. The complete test takes only a couple of minutes. It is also possible for the instrument to estimate a reading from known ageing processes within the eye if a peripheral test is unable to be performed.

It is easy for non-technical staff to operate the screener, after some basic training, and allows clinicians to advise patients on whether their macular pigment is too low. The screener can be easily linked to a Windows based PC for complete display of subject responses which provide confidence in the accuracy of the test. Not only does the system display the Macular Pigment Optical Density but also shows data which provides confidence in its accuracy.

Once the results are recorded, practitioners can advise patients on the benefits of modifying diet, lifestyle and taking lutein/zeaxanthin supplements to reduce the risk of future eyesight deterioration.

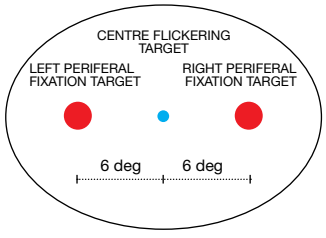


1.0 Age-related macular degeneration (ARMD)

2.0 Early stages of (ARMD)

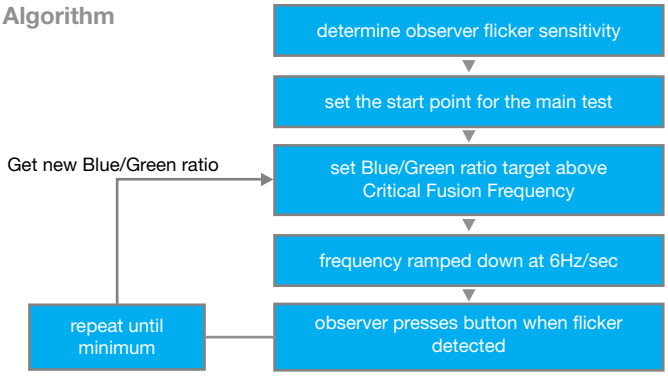
3.0 Healthy eye

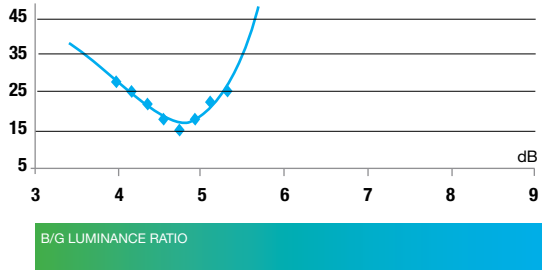
MPOD macular pigment screener



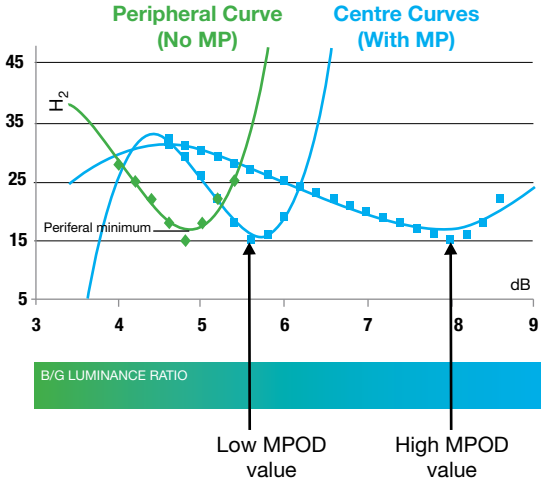
MPOD
1 deg test (470/540nm)
250cd/m2
Pulse width modulation
1.2 correction for spectral overlap of LEDs
ramps frequency to obtain iso-Luminant point

Algorithm





Data



MP optical density is based on the relationship between the periferal minimum and the centre minimum

Results of supplemetation