

Y3: Monocular and Binocular Visual Acuity Changes with Luminance-modulated and Contrast-modulated Letters in Visually Normal Eyes throughout Adulthood

Pui JW, Hairol MI, Kaur S

Optometry and Vision Sciences Programme, School of Healthcare Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: Evidence that human visual performance declines with normal ageing abounds. However, age-related visual acuity (VA) changes with contrast-modulated stimuli still remain unclear. This study was conducted to evaluate the effect of healthy ageing on visual acuity using luminance-modulated (LM) and contrast-modulated (CM) letter stimuli. **Methods:** We measured VA with LM and CM letter stimuli monocularly and binocularly in healthy and visually normal adults aged between 21 to 70 years old. **Results:** VA with LM letters was better than that with CM letters ($p < 0.05$). There was a significant decrease in VA with ageing for both stimulus types ($p < 0.05$). Throughout adulthood, binocular VA was better than monocular VA ($p < 0.05$) and binocular summation ratio for CM letters was significantly higher than that for LM letters ($p < 0.05$). Piecewise models showed that VA with LM letters (monocular and binocular) improved (logMAR vs age slope of ~ -0.013) until the age of 35 ± 0.90 , followed by a decline (slope of ~ 0.009) with increasing age. A similar trend is observed for monocularly viewed CM letters. However, for binocularly viewed CM letters, the best VA was obtained in our youngest age group up to age of 37 ± 5.88 followed by a decline with increasing age. **Conclusion:** A young binocular visual system may give advantage for resolving CM letters over LM letters and older age. VA measurements with contrast-modulated stimuli might be useful to detect subtle binocular anomalies which would be missed if measured with luminance-modulated stimuli.

Y4: Time-Kill and Scanning Electron Microscope Studies of Pterostilbene against Human Pathogens

Wee XL, Ghazali AR, Basri DF

School of Diagnostic & Applied Health Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia

ABSTRACT

Introduction: Pterostilbene is an analogue to resveratrol which is found in blueberries and grapes. The antibacterial activity of pterostilbene in combination with gentamicin against six strains of Gram-positive and Gram-negative bacteria were investigated. **Methods:** The minimum inhibitory concentration of pterostilbene were determined using microdilution technique whereas the antibacterial activities of pterostilbene in combination with gentamicin were assessed using time-kill kinetic study. Scanning electron microscopy (SEM) was used to study the morphological alteration of the bacteria cells treated by pterostilbene. **Results:** Results of the present study showed that pterostilbene exhibited inhibitory effects against three bacteria strains as followed: *Staphylococcus aureus* ATCC 25923, *Escherichia coli* O157 and *Pseudomonas aeruginosa* 15442. The time-kill study showed that combination effects of pterostilbene with gentamicin was indifference which did not significantly differ from the gentamicin treatment. Furthermore, time-kill study also showed that the growth of bacteria was completely attenuated within 24 hours treatment with $0.5 \times \text{MIC}$ of pterostilbene and gentamicin. The SEM results confirmed that the pterostilbene-treated *S. aureus* and *E. coli* cells were damaged, showing formation of pores and blebs in the cell wall of the bacteria, while significant changes in cell shape were observed in *S. aureus*. **Conclusion:** The identified antibacterial effects could be of effective therapeutic value against bacterial infections.