

The Effect of Tinted Light on Perception of Tinnitus: A Preliminary Study

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Background

Tinnitus perception can be modulated by a range of cross sensory stimuli, although specific effects of colored (tinted) light on tinnitus have not been previously reported. This preliminary study aimed to establish if tinted light modulated tinnitus perception.

Methods

Tinnitus patients (n=94) clinically screened for chronic tinnitus >6 months were recruited. Assessment employed THI scores, Likert and VAS scales. Experiments were conducted in darkened sound proof rooms. Subjects reported if their tinnitus changed whilst observing a 20x30 cm light field at 30-40 cm distance. Illumination was PC controlled and generated by three banks of tuned RGB LEDs, output re: CIE 1931 X:Y colour space (CS) co-ordinates; White=0.333:0.333; 800lx (Orthoscopics, Cambridge, UK). Under user direction for \approx 5-10 mins, X:Y points in CS reported to affect tinnitus were identified and recorded re: CIE 1931.

Results & Conclusion

41/94 subjects reported acute improvement at 1 or more CS points, 6/94 reported worsening. Proportionately more reports of improvement occurred within the predominantly 'blue' CS boundaries; Blue:Red:Green = 29:8:4 \approx 70%:20%:10%. In particular, there appeared favoured colour regions, eg. X:Y centred at \approx 0.15:0.1; (an intense 'blue'). Of the 41 reporting improvement, 23 went on to repeat tests at 30-90 mins. All reported improvement, with 13/23 (55%) choosing at least 1 identical 'improving' X:Y CS point re:Test 1. Chronic repeat tests at 6-24 months for 15 returning 'improved' subjects, all reported improvement, with 9/15 (60%) choosing identical CS points re:Test 1. In short 3 min longevity tests by 31/41 improved subjects, median VAS score dropped by 50% from 6 (re:dark) to 3 ($p < 0.0001$). A Multiple Logistic Regression Model returned three covariates: gender; age; mood change as highly significantly predictors of ($p < 0.003$ - 0.0004) reported improvement. This early study suggests tinted light may have some therapeutic potential in treating tinnitus in responsive subjects.