

# Transcranial Bright Light Treatment via Ear Canals in Seasonal Affective Disorder (SAD) – a Randomized Controlled Trial

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**Background:** Bright light treatment is effective for winter-type seasonal affective disorder (SAD) although the mechanisms of action remain open. We investigated whether transcranial bright light via ear canal has an antidepressant effect in treatment of SAD.

**Methods:** During the four-week study period 89 subjects suffering from SAD received 12-min daily doses of photic energy in three different randomly divided groups (1, 4, 9 lumen). The light was produced using light-emitting diodes (LEDs). Severity of depressive symptoms was assessed with Hamilton Depression Rating Scale – Seasonal Affective Disorder (SIGH-SAD), Hamilton Anxiety Rating Scale (HAMA) and Beck's Depression Inventory (BDI).

**Results:** Compared to baseline, the mean SIGH-SAD total scores decreased significantly, 17.6 points (47.4%,  $p < .0001$ ), 17.0 points (45.9%,  $p < .0001$ ) and 15.9 points (43.7%,  $p < .0001$ ) in the three treatment groups, respectively. The corresponding decreases were 12.0 (49.9%,  $p < .0137$ ), 11.4 (49.5%,  $p < .0056$ ), 10.1 (46.5%,  $p < .0001$ ) for HAMA and 13.7 (67.3%,  $p < .0158$ ), 13.4 (67.4%,  $p < .1282$ ), 11.9 (63.2%,  $p < .0013$ ) for BDI. The response rates in groups assessed with BDI were 74%-79%, being 35%-45% and 47%-62% for SIGH-SAD and HAMA, respectively.

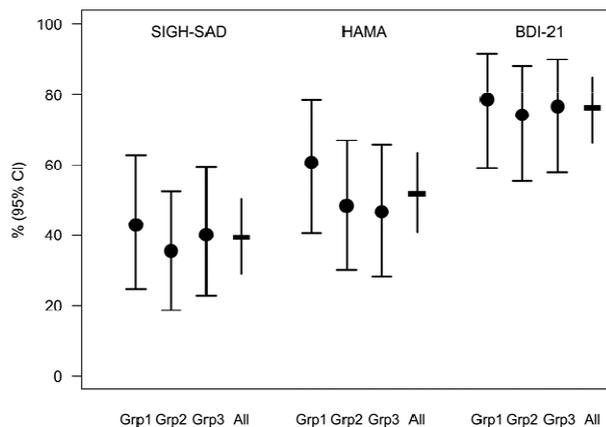


Figure 1. Response rates (percentage of subjects meeting response criteria i.e. >50% decrease of symptom scores) measured by SIGH-SAD, HAMA and BDI in three treatment groups (grp1 = 1 lumen, grp2 = 4 lumen, grp3 = 9 lumen).

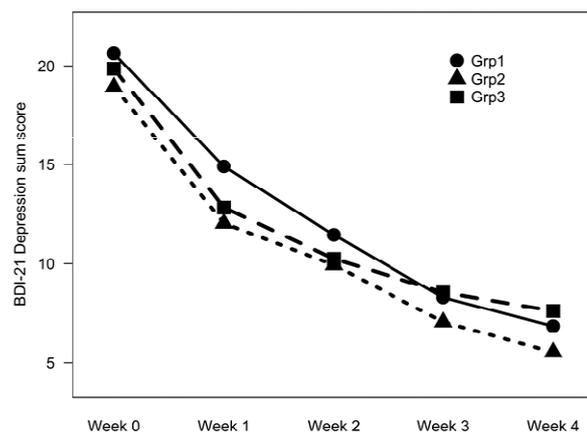


Figure 2. BDI-21 Depression sum score during the four-week treatment period in different treatment groups (grp1 = 1 lumen, grp2 = 4 lumen, grp3 = 9 lumen)

## Conclusion:

This is the first controlled clinical trial to show antidepressant and anxiolytic effect of transcranial bright light on SAD patients. These results are comparable to findings of earlier bright light studies with traditional devices.