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## Efficacy and safety of MMFS-01, a synapse density enhancer, for reversing age-related cognitive decline: A randomized, double-blind, placebo-controlled trial

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**Background:** Age-related cognitive decline is a major problem in elderly, affecting quality of life. Pre-clinical studies show that MMFS-01, a synapse density enhancer, is effective at reversing cognitive decline in aging rodents.

**Objective:** Since brain atrophy during aging is strongly associated with both cognitive decline and sleep disorder, we evaluated the efficacy of MMFS-01 in its ability to reverse cognitive decline and improve sleep.

**Methods:** We conducted a randomized, double-blind, placebo-controlled, parallel-designed trial in elderly subjects (age 50-70) with complaints of memory impairment, sleep disorder, and anxiety. Subjects were treated with MMFS-01 (n=23) or placebo (n=21) for 12 weeks and cognitive ability, sleep quality, and emotion were evaluated. Overall cognitive ability was determined by a composite score of tests in four major cognitive domains.

**Results:** With MMFS-01 treatment, overall cognitive ability improved significantly relative to placebo ( $p=0.002$ ; Cohen's  $d=0.92$ ). Age-related cognitive fluctuation was also reduced. Although the study population had more severe executive function deficits than age-matched controls, MMFS-01 treatment nearly restored impaired executive function, demonstrating that MMFS-01 was clinically significant. Sleep quality and anxiety were improved in MMFS-01 treatment group; however, similar degrees of improvement were also observed in the placebo control group.

**Conclusions:** The current study demonstrates the potential of MMFS-01 for treating age-related cognitive decline in elderly.

### Biography

Guosong Liu received his PhD in Physiological Sciences from the University of California, Los Angeles in 1990. He completed post-doctoral scientific training at Stanford University and then went on to a faculty position at Massachusetts Institute of Technology. Liu continued a vigorous scientific research program at Tsinghua University, and leads and oversees - as CEO - the multiple clinical development programs of Neurocentria. Dr. Liu is a world renowned expert in synaptic physiology, learning, and memory. His research focuses primarily on discovering principles that regulate synapse density in the brain under physiological and pathological conditions and developing novel strategies for treating neurodegeneration and preventing brain atrophy.

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