

Neurocentria's Candidate Compound MMFS Improves Brain Age by 9 Years in Human Study on Older Adults with Mild Cognitive Impairment

Data from double-blind placebo-controlled clinical trial, now published in the Journal of Alzheimer's Disease, supports ongoing studies in early Alzheimer's patients

WALNUT CREEK, California., October 28, 2015 — Neurocentria Inc., a clinical-stage pharmaceutical company developing therapeutics to enhance brain function and correct cognitive impairment, announced the successful completion of a human study demonstrating that the company's lead compound significantly reversed cognitive impairment in subjects 50 to 70 years old. The results have been published in the peer-reviewed Journal of Alzheimer's Disease.

Alzheimer's, and the high-risk condition that precedes it—Mild Cognitive Impairment—together affect more than 11 million Americans. Mild Cognitive Impairment increases the risk of Alzheimer's by up to ten-fold. Alzheimer's is both the most common cause of dementia and the sixth leading cause of death in the United States. In 2015, Alzheimer's and other dementias will cost the nation \$226 billion—a number that's expected to rise as high as \$1.1 trillion by 2050, according to The Alzheimer's Association. Yet there is currently no FDA-approved treatment to prevent the disease or stop it from progressing.

The trial evaluated human efficacy for Neurocentria's MMFS-01, an oral compound designed to increase synaptic density in brain regions critical for executive function and memory, including the prefrontal cortex and hippocampus. Synaptic loss is the hallmark of cognitive decline in aging, Alzheimer's and most other neurological diseases that present with cognitive impairment.

The double-blind, placebo-controlled clinical trial demonstrated with high statistical significance ($p < 0.01$) that MMFS improved subjects' overall cognitive ability, as determined by a composite score of tests in four major cognitive domains: executive function, working memory, attention and episodic memory.

Importantly, MMFS improved cognitive function performance seen at baseline, while the majority of human clinical trials for other Alzheimer's drugs under development are focused on slowing down cognitive decline. In addition, it achieved statistical significance in just six weeks of treatment. For comparable drugs, statistical significance has been seen after much longer timeframe, ranging from 12 to 72 weeks.

The study results have clinical significance. The study measured the "brain age" of subjects based on their executive function performance. The brain age of study participants taking MMFS improved by nine years after six weeks of treatment, and persisted after 12 weeks of treatment. By contrast, participants who received a placebo saw little change in their average brain age. These data demonstrate that MMFS is effective at reversing cognitive deficit. The study also showed that MMFS was well tolerated; all adverse events were of mild severity, and there were a greater number of such events under placebo versus treatment conditions.

"The results suggest an exciting potential for MMFS to treat cognitive impairment in the elderly," said Zhong-Lin Lu, a co-author of the study and director of the Center for Cognitive and Behavioral Brain Imaging and director of the Center for Cognitive and Brain Sciences at The Ohio State University. "Synaptic loss is a hallmark of the aging brain, resulting in cognitive impairments that

can severely affect the quality of life. Neurocentria's approach has been shown to successfully restore brain functions in humans, reinforcing what we have seen in extensive preclinical research."

Neurocentria's compound has a novel, disease-agnostic mechanism of action that expands on more than a decade of neuroscience research and discovery published in journals such as *Nature* and *Neuron*, and carried out at the Massachusetts Institute of Technology, Tsinghua University in Beijing and the company's Silicon Valley headquarters. The company's early work focused on uncovering the principles behind synaptic regulation, which led to the discovery of a novel mechanism for upregulating synaptic density and plasticity. With this understanding, Neurocentria developed MMFS, which drives mitochondrial energy production, synaptogenesis and synaptic plasticity.

"The effect size for change in overall cognitive ability was robust—two to three times greater than what's been reported for current treatments and other leading drug candidates in the cognitive impairment space," said Guosong Liu, M.D., Ph.D., CEO of Neurocentria, noting that the large effect size, measured by Cohen's *d*, means fewer subjects will be needed to demonstrate the compound's effectiveness in Phase III trials for FDA drug approval.

Neurocentria has an ongoing trial at Stanford University testing the efficacy of its candidate compound for improving cognitive function and brain metabolism in mild to moderate Alzheimer's patients, with expected completion in the fourth quarter of 2015. Neurocentria expects to begin late-stage trials next year.

The *Journal of Alzheimer's Disease* is an international multidisciplinary journal to facilitate progress in understanding the etiology, pathogenesis, epidemiology, genetics, behavior, treatment and psychology of Alzheimer's disease. The journal is dedicated to providing an open forum for original research that will expedite our fundamental understanding of Alzheimer's disease.