

## Press release

### **Clinical trial shows metabolic activators improve cognitive function in Parkinson's disease patients**

*The neuropathologic hallmarks of Parkinson's disease (PD) are associated with mitochondrial dysfunction and metabolic abnormalities. The prevalence of PD has surpassed that of Alzheimer's disease (AD) and many other neurodegenerative diseases. This research builds upon a broader understanding of the importance of mitochondrial health in response to metabolic stress. Given the scientific understanding that people with various metabolic conditions have a greater risk of poor outcomes, it is important to understand the potential benefit of mitochondrial health in aiding PD patients. A Phase 2 study published today in the pre-print server MedRxiv finds administration of combined metabolic activators in moderate-to-severe PD patients improves cognitive function.*

STOCKHOLM, August 5, 2021: ScandiBio Therapeutics, a biotechnology company originating from the Swedish national infrastructure Science for Life Laboratory today announced that patients with mild-to-moderate PD experienced a significant improvement in cognitive function when receiving a combined oral metabolic activator (CMAs), consisting of L-serine, N-acetyl-L-cysteine (NAC), nicotinamide riboside (NR), and L-carnitine tartrate, compared to placebo in a multi-center Phase 2 clinical study. Patients receiving CMAs also experienced a significant improvement in mitochondrial function based on proteomics and metabolomics data.

Results from the study "Combined Metabolic Activators Improve Cognitive Functions without Altering Motor Scores in Parkinson's Disease" were published today on the open-access pre-print server medRxiv.org <https://www.medrxiv.org/content/10.1101/2021.07.28.21261293v1>. The research was conducted in partnership with ChromaDex (California, USA) (NASDAQ:CDXC) which provided one of the four ingredients (Niagen<sup>®</sup> nicotinamide riboside) through the ChromaDex External Research Program (CERP). The phase 2 clinical study was led by Dr. Adil Mardinoglu and took place at the two internationally recognized university hospitals, Alanya Alaaddin Keykubat University and Istanbul Medipol University.

Researchers from Science for Life Laboratory (SciLifeLab) at KTH Royal Institute of Technology in Stockholm designed a randomized, double-blinded, placebo-controlled, phase 2 study in PD patients with CMA administration. The researchers found that cognitive function in PD patients significantly improved by 21% in the CMA group versus an improvement of 11% in the placebo group after 84 days. They also found that administration of CMA did not negatively affect motor function in PD patients.

The researchers performed a comprehensive multi-omics analysis of plasma proteins and metabolites to elucidate the molecular mechanism associated with the observed effects in the patients.

The findings of the study are consistent with the results of a recently reported AD clinical phase 2 study, where they administered CMA to 60 AD patients using the same protocol <https://www.medrxiv.org/content/10.1101/2021.07.14.21260511v2>. In the AD study, cognitive function was determined using the AD Assessment Scale-cognitive subscale (ADAS-Cog) score which was improved by 29% in the CMA group vs 14% in the placebo group after 84 days of CMA administration. The approximate 11-14% improvement in the placebo groups in both the PD and AD clinical trials can be explained by the recommendations to incorporate exercise and a Mediterranean diet to all patients. In conclusion, the results show that treating PD and AD patients with CMAs leads to enhanced cognitive function.

“Based on data-driven modeling and systems biology, we found that oral administration of a mixture of metabolic activators has a profound effect on cognitive function after only a few months of treatment in PD and AD patients. The effect was further supported with a comprehensive analysis of plasma protein and metabolites from patients using a multi-omics analytical platform” said principal study investigator Prof. Mardinoglu. “The insights provided by this data warrant further clinical study of the CMAs to improve cognitive function in PD and AD. We look forward to the initiation of a Phase 3 clinical study in the near future in AD and PD patients.”

For additional information see the open-access publication about PD:  
<https://www.medrxiv.org/content/10.1101/2021.07.28.21261293v1>

Contact :

Prof Adil Mardinoglu, email : [adilm@scilifelab.se](mailto:adilm@scilifelab.se)

Prof Mathias Uhlén, email : [mathias.uhlen@scilifelab.se](mailto:mathias.uhlen@scilifelab.se)

## ***About***

### ***ScandiBio Therapeutics, Stockholm, Sweden***

ScandiBio Therapeutics is a biotechnology company founded by researchers from the KTH Royal Institute of Technology, Karolinska Institutet, and Sahlgrenska Academy in Sweden. The science originates from research conducted at the Science for Life Laboratory in Stockholm (reference Professor Adil Mardinoglu and Professor Mathias Uhlén) together with researchers at the Sahlgrenska Academy in Göteborg (reference Professor Jan Borén). A platform for AI-based modeling of biology and medicine has been developed to allow the potential treatment of diseases with metabolic dysfunction. The company has developed drug candidates consisting of a combination of several metabolic activators aimed to improve for patients with mitochondrial dysfunction. A large number of human clinical trials have been initiated using one of these drug candidates to treat several diseases with metabolic problems, including COVID-19, Alzheimer's Disease, Parkinson's Disease, non-alcoholic fatty liver disease (NAFLD) and, gout.

For more information, see: [www.scandibio.com](http://www.scandibio.com)

### ***Science for Life Laboratory, Stockholm, Sweden***

Science for Life Laboratory, SciLifeLab, is a research institution for the advancement of molecular biosciences in Sweden. SciLifeLab started out in 2010 as a joint effort between four universities: Karolinska Institutet, KTH Royal Institute of Technology, Stockholm University, and Uppsala University. The center provides access to a variety of advanced infrastructures in life science for thousands of researchers creating a unique environment for health and environmental research at the highest level.

For more information, see: [www.scilifelab.se](http://www.scilifelab.se)

### ***KTH Royal Institute of Technology, Stockholm, Sweden***

Since its founding in 1827, the KTH Royal Institute of Technology in Stockholm has grown to become one of Europe's leading technical and engineering universities, as well as a key center of intellectual talent and innovation. KTH is Sweden's largest technical research and learning institution and home to students, researchers, and faculty from around the world dedicated to advancing knowledge.

For more information, see: [www.kth.se](http://www.kth.se)

### ***Karolinska Institutet, Stockholm, Sweden***

Karolinska Institutet is one of the world's leading medical universities. The vision is to advance knowledge about life and strive towards better health for all. As a university, KI is Sweden's single largest center of medical academic research and offers the country's widest range of medical courses and programs. Since 1901 the Nobel Assembly at Karolinska Institutet has selected the Nobel laureates in Physiology or Medicine.

For more information, see: [ki.se](#)

**King's College London, UK**

[King's College London](#) is one of the top 35 UK universities in the world and one of the top 10 in Europe (QS World University Rankings, 2020/21) and among the oldest in England. King's has more than 31,000 students (including more than 12,800 postgraduates) from some 150 countries worldwide, and some 8,500 staff. King's has an outstanding reputation for world-class teaching and cutting-edge research. In the 2014 Research Excellence Framework (REF), eighty-four percent of research at King's was deemed 'world-leading' or 'internationally excellent' (3\* and 4\*).

For more information, see: <https://www.kcl.ac.uk/>