

ChromaDex Shares Promising Findings from Clinical Study Showcasing the Safety and Tolerability of Nicotinamide Riboside (NR) in Heart Failure With Reduced Ejection Fraction

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This is the first study to investigate the safety and tolerability of NR in a randomized, placebo-controlled trial of patients with heart failure, marking a milestone for future clinical research

LOS ANGELES--(BUSINESS WIRE)-- ChromaDex Corp. (NASDAQ:CDXC) today announced promising findings from a clinical study, as reported in the peer-reviewed journal **Journal of the American College of Cardiology (JACC): Basic to Translational Science** by a team of scientists led by Dr. Kevin O'Brien, Division of Cardiology, Department of Medicine, in collaboration with Dr. Rong Tian, Mitochondria and Metabolism Center, Department of Anesthesiology and Pain Medicine, University of Washington School of Medicine, Seattle, Washington, USA. The clinical study was part of the ChromaDex External Research Program (CERP™) and investigated the safety and tolerability of the company's proprietary Niagen® ingredient, patented nicotinamide riboside or NR, in Stage C heart failure patients with reduced ejection fraction (HFrEF), which occurs when the left ventricular ejection fraction (LVEF) is 40% or less. Additionally, the effects of NR on white blood cells' mitochondrial respiratory function, inflammation and whole blood nicotinamide adenine dinucleotide (NAD+) levels were assessed. The promising results from this study demonstrate that high-dose NR was safe and well-tolerated, almost doubling whole blood NAD+ levels, increasing white blood cell mitochondrial respiratory function and decreasing the expression of inflammatory markers. This study marks a major milestone as it is the first study to investigate the safety and tolerability of NR in a randomized, placebo-controlled trial of patients with heart failure, a crucial step that will pave the way for future clinical research.

“On behalf of CERP, we are thrilled with the results of this study as it builds on the pilot study by Zhou et al., 2020, which demonstrated oral supplementation of NR in Stage D heart failure patients increased whole blood NAD+ levels,” said Dr. Andrew Shao, ChromaDex Senior Vice President of Global Scientific & Regulatory Affairs. “With almost 6.2 million adults in the US alone having been diagnosed with heart failure ([cdc.gov](https://www.cdc.gov)), we are very much looking forward to working with investigators to further develop this research.”

Heart failure is a clinical condition that is caused by structural and functional defects in the heart, which results in impaired filling or pumping of blood. There are four stages to heart disease, A, B, C and D, with Stage C patients having been diagnosed with heart failure and had or currently have symptoms of the condition. Recent research suggests that a decline in NAD+ levels may contribute to dysfunctional energy metabolism in conditions like heart failure, and increasing NAD+ levels through precursor supplementation may play a role in the progression of heart failure¹²³. NR is the most efficient NAD+ precursor and further research is needed to understand its potential as a therapeutic option for heart failure patients.

“The study met its primary endpoint by confirming that NR was safe and well-tolerated in patients with clinically stable heart failure,” said Dr. Kevin O’Brien. “In addition, we found that, in these patients, increasing blood NAD+ levels with NR improved the ability of white blood cell mitochondria to generate energy.”

“The anti-inflammatory effect of NR, although not a primary endpoint of the trial, is an exciting finding. It offers a new therapeutic opportunity in heart failure and other conditions associated with chronic inflammation,” said Dr. Rong Tian.

This randomized, double-blinded, placebo-controlled clinical study analyzed 30 Stage C heart failure patients over 12 weeks. The patients were supplemented with escalating doses of NR or placebo starting at 250mg twice per day, then increasing by 250mg twice per day each week resulting in a final dose of 2000mg/day at week 3 and beyond. The results showcased:

- NR was well-tolerated, with no adverse side effects and nearly doubled whole blood NAD+ levels.
- Increased NAD+ resulted in increased white blood cell mitochondrial respiration and decreased expression of inflammatory markers, such as NLRP3 (when there is extreme damage in the heart, the protein NLRP3 can induce excessive inflammation, leading to tissue damage, cardiac remodeling and impaired function). This suggests that boosting NAD+ helps reduce systemic inflammation.

These promising results suggest that NR supplementation may have therapeutic potential in patients with heart failure and will set the groundwork for future research to determine its use as a potential therapeutic strategy.

For additional information on the science supporting Niagen® visit www.chromadex.com.

About ChromaDex:

ChromaDex Corp. is a global bioscience company dedicated to healthy aging. The ChromaDex team, which includes world-renowned scientists, is pioneering research on nicotinamide adenine dinucleotide (NAD+), levels of which decline with age. ChromaDex is the innovator behind NAD+ precursor nicotinamide riboside (NR), commercialized as the flagship ingredient Niagen®. Nicotinamide riboside and other NAD+ precursors are protected by ChromaDex's patent portfolio. ChromaDex maintains a website at www.chromadex.com to which ChromaDex regularly posts copies of its press releases as well as additional and financial information about the Company.

Forward-Looking Statements:

This release contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities and Exchange Act of 1934, as amended, including statements related to the results of the clinical study, whether NR supplementation may have a therapeutic potential in patients with heart failure, and whether it will set the groundwork for any future research. Statements that are not a description of historical facts constitute forward-looking statements and may often, but not always, be identified by the use of such words as "expects," "anticipates," "intends," "estimates," "plans," "potential," "possible," "probable," "believes," "seeks," "may," "will," "should," "could" or the negative of such terms or other similar expressions. Risks that contribute to the uncertain nature of these forward-looking statements include the impact of the COVID-19 pandemic on our business and the global economy; our history of operating losses and need to obtain additional financing; the growth and profitability of our product sales; our ability to maintain sales, marketing and distribution capabilities; changing consumer perceptions of our products; our reliance on a single or limited number of third-party suppliers; and the risks and uncertainties associated with our business and financial condition. More detailed information about ChromaDex and the risk factors that may affect the realization of forward-looking statements is set forth in ChromaDex's Annual Report on Form 10-K for the fiscal year ended December 31, 2021, ChromaDex's Quarterly Reports on Form 10-Q and other filings submitted by ChromaDex to the SEC, copies of which may be obtained from the SEC's website at www.sec.gov. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof, and actual results may differ materially from those suggested by these forward-looking statements. All forward-looking statements are qualified in their entirety by this cautionary statement and ChromaDex undertakes no obligation to revise or update this release to reflect events or circumstances after the date hereof.

1 Diguët, N., Trammell, S.A.J., Tannous, C., Deloux, R., Piquereau, J., Mougenot, N. et al. (2018) Nicotinamide Riboside Preserves Cardiac Function in a Mouse Model of Dilated Cardiomyopathy. *Circulation*, 137, 2256-73.

<https://doi.org/10.1161/circulationaha.116.026099>

2 Tong, D., Schiattarella, G.G., Jiang, N., Altamirano, F., Szweda, P.A., Elnwasany, A. et al. (2021) NAD+ Repletion Reverses Heart Failure With Preserved Ejection Fraction. *Circulation Research*, 128, 1629–41.

<https://doi.org/10.1161/circresaha.120.317046>

3 Walker, M.A. and Tian, R. (2018) Raising NAD in Heart Failure. *Circulation*, 137, 2274–7.

<https://doi.org/10.1161/circulationaha.117.032626>

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