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For Immediate Release

Landmark study establishes blood NAD and glutathione reference ranges, enabling identification of abnormal metabolic patterns across diseases.

A large population study shows that NAD and glutathione, two essential drivers of cellular energy metabolism, can now be reliably measured and benchmarked against a healthy reference range from a single whole-blood sample, revealing distinct redox fingerprint patterns across multiple diseases. The study was published in Redox Biology and was led by researchers at the University of Helsinki, with NADMED co-authors.

The reference range is based on data from 330 healthy men and women aged 18–70, profiled using NADMED's redox metabolite testing platform. Applying this same platform to patient biobank samples with different pathologies, the researchers found distinct, disease-associated alterations in NAD and glutathione levels. The study also showed that systemic NAD does not decline with healthy aging, supporting the inclusion of individuals aged 18–70 years in the reference range.

“Establishing what a normal NAD and glutathione profile looks like has been a missing piece for the field,” says professor Anu Suomalainen Wartiovaara, University of Helsinki. “Now the individuals whose levels are substantially altered can be identified. This offers an important tool for scientists and clinicians to determine whether correcting these abnormalities in specific diseases results in meaningful clinical benefit for patients, as has been shown with mitochondrial myopathy.”

NADMED's redox profiling platform quantifies all six key NAD and glutathione-related metabolites from a fresh or frozen single whole-blood sample using conventional, scalable laboratory method. The technology is CE-marked and can be used in any standard laboratory.

“Our work addresses a critical gap in human redox biology: the lack of standardized measurements for all NAD and glutathione forms, which previously left us with fragmented

data," says Liliya Euro, Docent in Medical Molecular Biology, co-founder and CSO of NADMED. "We developed a universally adoptable redox profiling pipeline to unify testing across laboratories. By defining baseline reference values for all six redox metabolites from a single sample, we are establishing the necessary groundwork for consistent, cross-referenced data in this rapidly growing field."

Beyond establishing the reference range, the study also found that steady-state blood NAD⁺ saturated in healthy individuals after supplementation, though the required dose varied meaningfully between people. This underscores the need for individualized dosing when administering these interventions.

"Our platform measures all six NAD and glutathione metabolites from a single blood sample. This study shows what those measurements can do: reference values for healthy adults, proof that levels hold stable through healthy ageing, and distinct redox fingerprints in disease that make treatment response measurable," says James Lee, CEO of NADMED. "It strengthens the foundation for expanding our work with laboratories, clinics, and pharma and biotech partners worldwide."

NAD is a coenzyme derived from vitamin B3, and N-acetylcysteine (NAC) is known to support the synthesis of glutathione. These pathways are widely studied in relation to cellular metabolism and antioxidant capacity, offering researchers and clinicians relevant biomarkers to consider when assessing metabolic or nutritional status. In parallel, interventions targeting these pathways are under active investigation in a wide variety of disorders.

These findings lay the groundwork for clinical practice by identifying NAD and glutathione reference ranges. They support further research on the clinical relevance of alterations across diseases, as well as whether abnormalities can and should be therapeutically targeted.

Study: Dynamics of blood NAD and glutathione in health, disease, aging, and under NAD⁺-booster treatment

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For further information, please contact:

James Lee, CEO

james.lee@nadmed.com

media@nadmed.com

About NADMED

NADMED Ltd is a spin-out from the University of Helsinki, currently serving over 100 organizations and companies across more than 30 countries worldwide. The proprietary CE-marked NADMED kit enables the measurement of NAD, a coenzyme derived from vitamin B3, which play a critical role in cellular energy production and repair processes. In addition,

NADMED offers glutathione measurement, targeting one of the body's most important antioxidants. The NADMED method is available both as a laboratory service and in kit format.

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