

Press release

NeuroVive Pharmaceutical AB (publ)
556595-6538



NeuroVive's genetic mitochondrial disease drug candidate KL1333 mechanism of action published in scientific journal

*Lund, Sweden and Seoul, Korea, 6 July 2018 – NeuroVive Pharmaceutical AB (Nasdaq Stockholm: NVP, OTCQX: NEVPF) and Yungjin Pharm Corporation Ltd (South Korea Stock Market, KRX 003520) today jointly announced that a report demonstrating the scientific rationale for KL1333 in genetic mitochondrial disease has been published in the journal *Frontiers in Neurology*.*

The details of the rationale for KL1333, now in clinical development for genetic mitochondrial disease, have not previously been communicated in a peer-reviewed scientific journal.

The report describes studies performed with KL1333 on cell cultures from mitochondrial disease patients that demonstrate how the compound improves mitochondrial function and energy metabolism, including enhanced ATP production and reduced generation of reactive oxygen species and lactate. Furthermore, the report shows how KL1333 induces the build-up of new mitochondria, a process called mitochondrial biogenesis, by increasing cellular NAD⁺ levels.

The manuscript entitled “KL1333, a Novel NAD⁺ Modulator, Improves Energy Metabolism and Mitochondrial Dysfunction in MELAS Fibroblasts”, can be accessed via the following link:

<https://www.frontiersin.org/articles/10.3389/fneur.2018.00552/abstract>

“There has been significant interest for a deeper understanding of the mechanism of action for our novel treatment opportunity. The comprehensive data from these studies will enable the scientific community to access the rationale of KL1333 for the treatment of genetic mitochondrial disease,” commented Kwang-Ok Lee, Head of Research Center at Yungjin Pharm.

There is a huge unmet medical need for medicines that treat genetic mitochondrial diseases. Patients can have severe symptoms in any organ and have significantly reduced life expectancy. These diseases are rare diseases for which there are almost no registered medicines.

“The now published report provides important basic understandings regarding KL1333 and its potential in providing a novel treatment opportunity to patients with genetic mitochondrial disease. The data is important in our further planning of clinical trials and in communication with the scientific and medical community, as well as with regulatory bodies,” commented Magnus Hansson, Chief Medical Officer and VP of Preclinical and Clinical Development at NeuroVive.

NeuroVive is together with a leading global contract research organization (CRO) planning and preparing for a phase I MAD (Multiple Ascending Dose) study of KL1333 in healthy volunteers and genetic mitochondrial disease patients. The study is expected to commence in the second half of 2018.

The information was submitted for publication, through the agency of the contact person set out below, at 08:30 a.m. CEST on 6 July 2018.

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About KL1333

KL1333 is a potent modulator of the cellular levels of NAD⁺, a central co-enzyme in the cell's energy metabolism. KL1333 has in preclinical models been demonstrated to increase mitochondrial energy output, reduce lactate accumulation, diminish the formation of free radicals and to have long-term beneficial effects on energy metabolism such as the formation of new mitochondria. It is in clinical development stage intended to document the use for chronic oral treatment in primary genetic mitochondrial disorders such as MELAS, KSS, PEO, Pearson and MERRF. KL1333 is currently being evaluated in clinical phase I studies and has been granted orphan drug designation in both the United States and Europe.

About genetic mitochondrial diseases

Genetic mitochondrial diseases are metabolic diseases that affect the ability of cells to convert energy. The disorders can manifest differently depending on the organs affected by the genetic defects and are viewed as syndromes. An estimated 12 in every 100,000 people suffer from a mitochondrial disease. Mitochondrial diseases often present in early childhood and lead to severe symptoms, such as stunted growth, heart failure and rhythm disturbances, dementia, movement disorders, stroke-like episodes, deafness, blindness, limited mobility of the eyes, vomiting and seizures.

About Yungjin Pharm

Yungjin Pharm Co. Ltd., established in 1952, has been playing a major role as a forerunner in the Korean pharmaceutical industry for half a century. With the inspiring mission statement, "To relieve the suffering of mankind from diseases with our innovative, effective and safe pharmaceutical products", they have shown a successful contribution not only within Korea, but also through global expansion. As a result, they have received a total of 25 awards including the President Award for Superior Product Development, the Prime Minister Award, Industry Award and many more. These accomplishments demonstrate their sustainability and commitment to the development of innovative products and business excellence in both overseas and domestic segments. The company is listed on the South Korean stock market, KOSPI (KRX 003520).

About NeuroVive

NeuroVive Pharmaceutical AB is a leader in mitochondrial medicine, with one project in clinical phase II development for the prevention of moderate to severe traumatic brain injury (NeuroSTAT[®]) and one project in clinical phase I (KL1333) for genetic mitochondrial diseases. The R&D portfolio consists of several late stage research programs in areas ranging from genetic mitochondrial disorders to cancer and metabolic diseases such as NASH. The company's strategy is to advance drugs for rare diseases through clinical development and into the market. The strategy for projects within larger indications outside the core focus area is out-licensing in the preclinical phase. NeuroVive is listed on Nasdaq Stockholm, Sweden (ticker: NVP). The share is also traded on the OTCQX Best Market in the US (OTC: NEVPF).

NeuroVive Pharmaceutical AB (publ) - the mitochondrial medicine company. The company is listed on Nasdaq Stockholm, Small Cap, under the ticker symbol NVP. The share is also traded on the OTC Markets Group Inc market in the US. NeuroVive Pharmaceutical (OTC: NEVPF) trades on the OTCQX Best Market. Investors can find Real-Time quotes and market information for the company at www.otcmartets.com/stock/NEVPF/quote