

NEWS RELEASE



October 7, 2019

Morpholino Oligonucleotide NS-065/NCNP-01 (viltolarsen), Presentation on results of an additional analysis of Phase I/II study in Japan

Nippon Shinyaku Co., Ltd. (Nippon Shinyaku; Headquarters, Kyoto City; President, Shigenobu Maekawa) announced that results of an additional analysis of a Phase I/II clinical trial of NS-065/NCNP-01 (generic name: viltolarsen) in Japan were presented at the 24th International Annual Congress of the World Muscle Society (WMS) held in Copenhagen, Denmark.

Hirofumi Komaki, MD, PhD, Study Chair, and Director General of Translational Medical Center, National Center of Neurology and Psychiatry (NCNP) made a presentation, reporting the restoration of dystrophin protein in skeletal muscle and results of physical function tests and quantitative muscle strength by viltolarsen.

The results of this Phase I/II study was also reported in the 23rd WMS in October, 2018. A 24-week dose finding study of intravenous viltolarsen (Japic CTI-163291) was conducted in 16 boys, age 5-12 years suffering from Duchenne muscular dystrophy (DMD), distributed between 2 dose cohorts, 40mg/kg and 80mg/kg. Both safety and efficacy were evaluated in this study. All adverse events were mild or moderate and no adverse events required discontinuation in this study. Increases in exon 53 skipping efficiency were observed in all patients, and drug-induced increases in dystrophin protein in muscle as a primary endpoint were seen in 14 out of 16 patients.

In the 24th WMS in this year, an additional analysis of this study was reported as follows. Although the number of subject was limited, a tendency of increase in muscle strength as a secondary endpoint was observed after treatment in the 80mg/kg group. In the correlation analysis between dystrophin expression and muscle strength, a tendency of increase in muscle strength was seen according to dystrophin expression in some muscle strength tests.

DMD is a debilitating and progressive muscle disease, and is caused by the loss of the dystrophin protein in patient muscle. An approach to restore dystrophin expression in patient muscle is through exon skipping, where nucleic acid drugs are delivered to change the RNA splicing patterns.

Nippon Shinyaku is developing viltolarsen in Japan as a new therapy for DMD for patients with dystrophin mutations that are amenable to exon 53 skipping.

NOTES:

<NS-065/NCNP-01 (viltolarsen)>

Viltolarsen is a morpholino antisense oligonucleotide, which was co-discovered by Nippon Shinyaku and National Center of Neurology and Psychiatry (NCNP: Kodaira City, Tokyo; President, Hidehiro Mizusawa, Executive Director, Shin'ichi Takeda). Viltolarsen is a drug candidate which is expected to generate a partially functional dystrophin protein and be effective for DMD amenable to exon 53 skipping. Nippon Shinyaku completed Phase I/II clinical trial and submitted an application for manufacturing distribution approval in Japan, and also completed Phase II clinical trial and submission of rolling new drug application in the US.

<Exon skipping>

Exon Skipping has potential as a therapy for patients with DMD, based on the use of a synthetic oligonucleotide, known as an antisense oligonucleotide, to restore the amino acid reading frame by skipping certain exons of the transcription product (mRNA) to be translated into protein. This approach produces a dystrophin protein that is shorter than normal but still functional, to improve muscle function.

Nippon Shinyaku Co., Ltd. (Kyoto, Japan)

<http://www.nippon-shinyaku.co.jp/english/>

E-mail: kouhou@mb.nippon-shinyaku.co.jp