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CONFERENCE PRESENTATION FOR NC-2800, AN ANTIDEPRESSANT/ANXIOLYTIC DRUG CANDIDATE TARGETING δ OPIOID RECEPTORS

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International Institute for Integrative Sleep Medicine, University of Tsukuba
Kitasato University
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International Institute for Integrative Sleep Medicine, University of Tsukuba, Kitasato University, National Center of Neurology and Psychiatry and Nippon Chemiphar Co., Ltd. have been proceeding with joint research for a selective δ opioid receptor (DOR) agonist (NC-2800) with support from Japan Agency for Medical Research and Development (AMED).

This time, as the result of this joint research, we have found that NC-2800 shows excellent and rapid antidepressant-like effects at low dose levels, in an animal model of depression which requires long term treatment before obtaining therapeutic effects with existent antidepressants. We are going to present the results at the Society for Neuroscience annual meeting 2016 to be held in San Diego, USA, from November 12 to 16, 2016.

Details of the presentation

Title	A novel δ opioid receptor agonist NC-2800 produces anxiolytic-like and antidepressant-like effects in animal models.
Presenter	Akiyoshi Saitoh[1] (Speaker), Eriko Nakata[2], Leo Gotoh[1], Masaaki Hirose[2], Junichi Sakai[2], Takao Komatsu[2], Hideaki Fujii[3], Mitsuhiko Yamada[1], Hiroshi Nagase[4], Tomio Yamakawa[2]
Poster Number	71.09 VV6
Date of presentation	November 12, 2016, 13:00-17:00 (local time)

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3. Laboratory of Medicinal Chemistry, School of Pharmacy, Kitasato University
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About anxiety and depression

Anxiety and depression are core mental manifestations commonly observed with various psychiatric diseases, which largely worsen quality of life and social function of patients. Widely used antidepressants, such as SSRIs, have unsolved problems including a delayed onset of therapeutic effects and low remission rates. In addition, existent anxiolytics, such as benzodiazepines, also have problems including sedation, transient amnesia and therapeutic dose dependence, so their usage is limited. Therefore, new antidepressants/anxiolytics overcoming these problems are strongly required.

In recent years, it has been suggested that DOR agonists show potent antidepressant/ anxiolytic-like effects without showing side effects such as constipation, respiratory depression and drug dependence, which are observed with μ opioid receptor agonists. Thus, DOR agonists are expected to be promising emotional modulators based on novel mechanisms of action. Under these circumstance, the above mentioned 4 members have proceeded with the joint research for discovery of an orally active antidepressant/anxiolytic drug targeting DORs, resulting in the discovery of a candidate compound, NC-2800. The present research results indicate a potential for NC-2800 as a new therapeutic agent overcoming problems associated with existent antidepressants/ anxiolytics. As there are no medicines targeting DORs yet, NC-2800 has the potential to be a first-in-class drug.

History of our joint research

- In 2013, adopted "Adaptable and Seamless Technology Transfer Program through Target Driven R&D (A-STEP), high-risk challenge type: Title: Discovery of δ opioid receptor agonist regulating the emotional system (Researchers: Hiroshi Nagase, Hideaki Fujii, Akiyoshi Saitoh, Company: Nippon Chemiphar Co., Ltd.)" with National Research and Developmental Agency, Japan Science and Technology Agency (JST).
- In 2015, adopted "Acceleration Transformative Research for Medical Innovation (ACT-M), Title: Development of δ opioid receptor agonist regulating the emotional system (Researchers: Hiroshi Nagase, Hideaki Fujii, Akiyoshi Saitoh, Company: Nippon Chemiphar Co., Ltd.)" with AMED.
- At present, we are developing with continuous public support, targeting completion of non-clinical studies during the ACT-M program period until Marth, 2018.

(References)

1. δ opioid receptor (DOR)

There are three subtypes of opioid receptors, μ, δ and κ. Clinical narcotic analgesics such as morphine show various side effects, such as constipation, respiratory depression or drug dependence derived from μ opioid receptors activation. On the contrary, activation of DORs has been associated with pharmacological effects such as improvement of depression and anxiety disorders, with few side effects. Therefore, DOR agonists are expected as promising antidepressants/anxiolytics, which have good safety and tolerability profiles.

2. Society for Neuroscience (SfN)

The largest conference in the neuroscience field in the world held every year in the USA with over 30,000 participants each time.

URL: https://www.sfn.org/annual-meeting/neuroscience-2016

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