DBPR116: A Development Drug Candidate Antagonist-to-Agonist Allosteric Modulator

INDICATIONS:

Moderate to Severe pain

PATENTS:

US, ROC(Taiwan) and PCT Patent applications

DEVELOPMENT STATUS:

Pre-clinical

CONTACT:

Pey-Yea Yang
Chief of Administration, Institute of Biotechnology and Pharmaceutical Research, National Health Research Institutes
No. 35, Keyan Rd.
Miaoli County 35053
Taiwan, R.O.C.
Tel: 886-37-206-166 ext. 35705
peyyea@nhri.edu.tw

INVENTION DESCRIPTION

- The invention relates to antagonist-to-agonist allosteric modifiers (AAM) of a mu-opioid receptor (MOR) for treating an opioid receptor-associated condition. In the presence of this unique AAM (DBPR116), MOR could be selective activated by general opioid antagonist naloxone or naltrexone, and produces antinociceptive effect without developing severe side effects *in vivo*. In combination with naltrexone (1 mg/kg), the median effective antinociceptive dose (ED_{50}) of the AAM in mouse model of acute thermal pain is lower than 10 mg/kg (i.v.). DBPR116 is a crystalline solid with acceptable maximum tolerate dose (MTD > 40 mg/kg) in rodents.

COMPETITIVE ADVANTAGES

- Compare to the most famous opioid, morphine, the DBPR116/naltrexone combination exerts comparable antinociceptive effect in mouse model of acute thermal pain hypersensitivity, measured by using tail-flick test; however, with fewer common side effects of opioids including analgesic tolerance, withdrawal, addiction, gastrointestinal dysfunction, respiratory depression, decrease in heart rate and sedation. It is worth noting that DBPR116/naltrexone combination exhibits even better antinociceptive effect than morphine does in mouse models of neuropathic pain and cancer pain, which is measured by using Von Frey Test. In conclusion, DBPR116/naltrexone combination should be a safer analgesic for treating severe pain, especially after chronic treatment.

MARKET POSITIONING/OPPORTUNITY

- There remain many unmet therapeutic needs in the treatment of pain, as well as high demand for analgesic treatments worldwide. In 2014, the global opioids market generated revenues over $20 billion. The invention demonstrates antinociceptive effect through MOR, so it is appropriate to use the DBPR116/naltrexone combination as most opioids for the treatment of acute and chronic pain, including renal colic, acute pancreatitis, angina, post-operative pain, chronic neuropathic pain, regional complex pain syndrome, chronic back pain and cancer pain, with fewer side effects. Due to the novel mechanism of action of DBPR116, there is few competitors relates to the invention. In the future, it should be a potentially First-in-Class drug for treating severe pain

June 15, 2021