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Eisai Co., Ltd

DISCOVERY RESEARCH ON AMPA-TYPE GLUTAMATE RECEPTOR ANTAGONIST PERAMPANEL HONORED WITH PSJ AWARD FOR DRUG RESEARCH AND DEVELOPMENT 2021

Eisai Co., Ltd. (Headquarters: Tokyo, CEO: Haruo Naito, “Eisai”) has announced that drug discovery research conducted on perampanel (brand name: FYCOMPA®, “perampanel”), the AMPA-type glutamate receptor antagonist discovered by Eisai, has been honored with The Pharmaceutical Society of Japan (PSJ) Award for Drug Research and Development 2021 by the PSJ.

The PSJ Award for Drug Research and Development is one of a series of awards presented by the PSJ and is dedicated to researchers who have conducted outstanding research work that has contributed to medicine through the innovative development of a pharmaceutical drug or applicable technology related to the pharmaceutical sciences. Award recipients are evaluated by the PSJ based on the ingenuity of the research itself as well as the effectiveness and safety of the related pharmaceutical product(s) or the innovativeness of the related medical treatment or treatment technology. The PSJ Award for Drug Research and Development was introduced by the PSJ in 1988, with Eisai previously receiving the award for drug discovery research in 1998 on donepezil hydrochloride, an Alzheimer’s disease treatment, in 2013 on eribulin mesylate, an anti-cancer agent, and in 2020 on lenvatinib, a multikinase inhibitor.

The reasons for the selection of this discovery research for the award are outlined by the PSJ as follows. Although glutamate receptors, which are responsible for neuronal excitation, have long been recognized as important drug discovery targets, they have not led to the creation of any drugs. By optimizing the structure of the lead compound obtained from uniquely constructed high-throughput screening (HTS), oral absorption, brain permeability, pharmacokinetics, subtype selectivity, etc. were improved. Thus this research succeeded in creating and developing the world's first drug that directly targets glutamate receptors, the inhibition of which is thought to be difficult to achieve without side effects, and is being used in more than 60 countries [currently more than 70 countries] around the world."

Perampanel is currently approved worldwide as an adjunctive treatment for partial-onset seizures (with or without secondarily generalized seizures) and an adjunctive therapy for primary generalized tonic-clonic seizures, in patients with epilepsy 12 years of age and older. In Japan and the United States, perampanel is approved for monotherapy and adjunctive use in the treatment of partial-onset seizures (with or without secondarily generalized seizures) in patients with epilepsy 4 years of age and older. In Europe the approved age range is 4 years of age and older for the adjunctive treatment of partial-onset seizures (with or without secondarily generalized seizures) and 7 years of age and older for the treatment as an adjunctive therapy for primary generalized tonic-clonic seizures. Perampanel has been used to treat more than 300,000 patients worldwide.

Eisai considers neurology, including epilepsy, a therapeutic area of focus. As we provide perampanel globally, Eisai pursues its mission to provide “seizure freedom” to a greater number of patients with epilepsy. Eisai seeks to address the diverse needs of, as well as increase the benefits provided to, patients with epilepsy and their families.

Theme of awarded research:
Drug discovery research of perampanel, an AMPA-type glutamate receptor antagonist

Award recipients:

Satoshi Nagato	(Director, Intellectual Property Department, Eisai)
Takahisa Hanada	(Senior Director, Strategy Planning & Operations, Medicine Development Center, Eisai)
Koshi Ueno	(Director, Intellectual Property Department, Patent Group 1, Eisai)
Masataka Ueno	(Former employee of Eisai)
Osamu Takenaka	(Senior Director, Clinical M&S, Clinical Pharmacology Science Department, Medicine Development Center, Eisai)

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[Notes to editors]

1. About perampanel (product name: Fycompa®)

Perampanel is a first-in-class anti-epileptic agent (AED) discovered and developed by Eisai. With epileptic seizures being mediated by the neurotransmitter glutamate, the agent is a highly selective, noncompetitive AMPA receptor antagonist that reduces neuronal hyperexcitation associated with seizures by targeting glutamate activity at AMPA receptors on postsynaptic membranes. Perampanel is currently approved in more than 70 countries and territories, including Japan, the United States, China, and other countries in Europe and in Asia as an adjunctive treatment for partial-onset seizures (with or without secondarily generalized seizures) in patients with epilepsy 12 years of age and older. In addition, perampanel has been approved in more than 70 countries, including the United States, Japan, in Europe and in Asia for treatment as an adjunctive therapy for primary generalized tonic-clonic seizures in patients with epilepsy 12 years of age and older. In Japan and the United States, perampanel is approved for monotherapy and adjunctive use in the treatment of partial-onset seizures (with or without secondarily generalized seizures) in patients with epilepsy 4 years of age and older. In Europe the approved age range is 4 years of age and older for the adjunctive treatment of partial-onset seizures (with or without secondarily generalized seizures) and 7 years of age and older for the treatment as an adjunctive therapy for primary generalized tonic-clonic seizure. Perampanel is available in drug form to be taken once daily orally at bedtime. A tablet and fine granule formulation have been approved in Japan. An oral suspension formulation and tablet have been approved in the United States and Europe. Eisai is conducting development of an injection formulation.

2. About AMPA-type glutamate receptor

It is widely accepted that glutamate is the principal excitatory neurotransmitter of the central nervous system and it plays a causative role in pathophysiology of epileptic seizures. Glutamate receptors at synaptic sites can be categorized as ionotropic or metabotropic one. The former mediates intracellular cation influx through activation by glutamate, and the latter mediates intracellular metabotropic process. The ionotropic glutamate receptors can be subcategorized by their agonist preferences (NMDA, AMPA or Kainic acid). It has been demonstrated that perampanel is a selective, non-competitive AMPA receptor antagonist.

AMPA receptors are widely distributed through the central nervous system in the brain, including the spinal cord, and are known to be abundant in the gray matter where nerve cells gather, with less density in the white matter. AMPA receptors mediate fast excitatory neurotransmission, and increased receptor expression in brain slice specimens from patients with epilepsy has been reported.