

## Neurosteroids - Neuropathic pain (NP)

### Development status

#### Preclinical trials

### IP protection status

Kudova et al.: Amphiphilic Compounds with Neuroprotective Properties. EP3260462 A, EP3260462 A, CA 2957906 A, JP 2017-511948, US 15/506318, AU 2015309371

### Partnering strategy

Collaboration, licensing, spin-off

### Challenge

The NP market is rife with unmet needs. The main classes of drugs used in the treatment of NP have traditionally consisted of antidepressants, anticonvulsants, opioid analgesics, and topical analgesics. Although many of the available drugs offer some degree of efficacy in terms of pain relief, there still remains vast room for improvement in efficacy, safety, drug delivery, and dosing convenience. Market size 2017 is about 3 bil. USD, CAGR 3%

### Description

Neurosteroids act as multi-target allosteric modulators of various neuro-receptors. Among others, the NMDA receptor modulators influence the ion flow in synapses. Allosteric NMDAr modulators do not reveal typical adverse effects (in animal models) like dizziness, nausea, somnolence or cognitive difficulties as the current therapeutics often acting as Ca or Na channel blockers. MS-225 shows inhibitory effect at micromolar concentrations. However, there are other receptor families involved in the pain perception. MS-225 modulates their function at nanomolar concentrations. This might be the dominant mode of action and as such is a subject of further research and a new application for extended patent protection. Besides the NP, some steroidal analogues has proven its efficacy in epilepsy or neuroprotection models.

### Commercial opportunity

If the clinical trials confirm its efficacy and low adverse effects, the molecule can easily acquire 10-30% of the market counting from 300 mil. to 1 bil. USD.

**STEROIDS for Neuropathic Pain Treatment**

**Efficacy:** Post-tetanic Potentiation (PTP) Model. Graphs showing PTP effect on mechanical pain threshold after chronic dosing.

**Safety:** Standard Plus Toxic. Activity Test - sedation 100 mg/kg. Graphs showing sedation levels.

**Pharmacokinetics:** PK Study after single i.p. dosing of 1, 3 and 10 mg/kg MS-225 in mice. Comparative Pilot PK study (i.p. dosing of MS-225 in rat and D10).

**Preclinical Plan:**

- Stereoid Pain models: Dorsal skin, Formalin, Streptozotocin
- Stereoid Analgesic and Neuroprotective Pain Treatment Response Assessment
- Test the effect of Stereoid on the sensory effect of Neurosteroids
- Conduct the study of Stereoid Neuroprotective effect on Stereoid
- Stereoid Analgesic and Neuroprotective Assessment
- Stereoid Neuroprotective Assessment

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**Project Manager Contact:** Jan Šesták, PhD. IOCB Tech, Institute of Organic Chemistry and Biochemistry, Prague, CZ.

### Institution



The Institute of Organic  
Chemistry and Biochemistry of  
CAS