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New innovative drug for the treatment of Parkinson's disease, epilepsy and chronic pain, with a combined n-Cholinolitic, Adenosine-releasing and vagal-stimulating activity

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New innovative drug IEM-1556 (N-decyltropine chloride) when administered orally in a dose of 5-10 mg/kg reduces by 2-2.5 times the average severity of kainate and nicotinic clonic-tonic seizures. IEM-1556 in dose 10 mg/kg most effectively by 3.2 times reduces the severity of clonic-tonic pentylenetetrazol kindling seizures, and also 100% reduces the number of rats with full kindling. On all three models IEM-1556 exceeds the activity of the standard antiepileptic drug sodium valproate and unlike it does not cause sedation. IEM-1556 by 1.5 times exceeds the antiparkinsonian and neuroprotective activity of the standard antiparkinsonian drug levodopa in the rat model of rotenone-induced parkinsonism, but unlike levodopa does not cause a hyperkinesia in rats. IEM-1556 is proposed as a new a highly efficient and safe drug for the treating of epilepsy and parkinsonism. IEM-1556 in a dose of 1-2 mg/kg increases the tai-flick latency in rats from 3 to 30 seconds and 60-80% decreases in the number of the paw licks in the late phase of the formalin test. Both this effects of IEM-1556 is eliminated after prior intragastric administration of the selective A1 adenosine receptor antagonist 1,3-dipropyl-8-phenylxanthine and 1% lidocaine, which speaks in favor of the involvement of A1 adenosine receptors and gastric vagal afferents in the analgesic effect of IEM-1556. It is assumed that IEM-1556 eliminates formalin hyperalgesia as a result of simultaneous enhancing of central and peripheral vagal inhibitory noxious control in the tail-flick test, caused by the combined stimulation of A1 adenosine receptors of the CNS and A1 receptors of the gastric vagus afferents. There is reason to believe that the IEM-1556 will eliminate chronic generalized pain and hyperalgesia in patients with fibromyalgia and neuropathic pain more effective than duloxetine and pregabalin, reinforcing only the central inhibitory noxious control.

Biography

Valery Gmiro is the leading researcher of Institute Experimental Medicine (Russia). He has published more than 100 papers in reputed journals. The main scientific interest concerns the chemistry and pharmacology of biologically active compounds. He is the USSR State Prise Winner for the investigations in the field of physiology of synaptic transmission. During last years V.Gmiro is working on the problem of the creation of adaptogenic drugs acting through activation of afferent nerves. These drugs were shown to be effective tools to study the mechanisms of transmission of afferent signals and may be of interest in clinic using.

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