

## Pharmacological properties and methods of analysis of Pyridostigmine bromide in medicines

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**Introduction.** Pyridostigmine bromide is an anticholinesterase drug of synthetic origin, which is one of the main drugs currently used to myasthenia gravis treat, a progressive disease characterized by impaired neuromuscular transmission due to damage to acetylcholine receptors on the postsynaptic membrane by specific antibodies.

According to various studies, the incidence of myasthenia is 1.7-30 cases per 100 thousand population per year. The prevalence of the disease has been gradually increasing over the last decade, mainly in the elderly, despite significant advances in diagnosis, treatment approaches and improved prognosis in general.

Pyridostigmine bromide binds reversibly to the active centers of acetylcholinesterase in the peripheral nervous system, thereby preventing the breakdown of acetylcholine. This leads to the accumulation of acetylcholine at cholinergic synapses and facilitates the transmission of impulses through the neuromuscular synapse.

**Materials and methods.** Analysis of the scientific literature, information sources and range of pharmacies on pharmacological properties, indications for use and dosage forms containing as an active pharmaceutical ingredient Pyridostigmine bromide and its methods of analysis in substance and in drugs.

**Results and discussion.** Pyridostigmine bromide is presented on the pharmaceutical market of Ukraine under the trade name "KALIMIN® 60 N" in the form of tablets of 60 mg of 50 or 100 tablets in a bottle, manufacturer "Merkle GmbH", Germany. Injectable solutions for injection – "MESTINON 5", manufacturer – "MEDA Pharma GmbH & Co.KG", Germany; "Mestinon® 60", coated tablets; "Mestinon® 10" tablets; "Mestinon® retard 180 mg" prolonged-release tablets, manufacturer – "MEDA Pharma" GmbH & Co.K G, Germany.

Pyridostigmine bromide is used to treat changes in neuromuscular junction and is also used prophylactically in GWI for stress prevention and against chemical and physical agents.

Pyridostigmine sometimes is used to treat orthostatic hypotension. It may also be of benefit in chronic axonal polyneuropathy.

It is also being prescribed 'off-label' for the postural tachycardia syndrome as well as complications resulting from Ehlers–Danlos syndrome.

It is also used together with atropine to end the effects of neuromuscular blocking medication of the non-depolarizing type. It is typically given by mouth but can also be used by injection. The effects generally begin within 45 minutes and last up to 6 hours.

For analysis of the active pharmaceutical ingredient, the world's leading pharmacopoeias recommend the identification and quantification by spectrophotometry in the ultraviolet region, using water as a solvent, the calculation of the content and identification should be carried out taking into account the specific absorption rate.

**Conclusions.** Analysis of the literature showed that Pyridostigmine bromide is the drug of choice for the treatment of myasthenic disorders, so it is important to develop modern drugs with Pyridostigmine bromide to provide patients with domestic drugs in Ukraine, as well as to improve methods of analysis that would be available for laboratories. universal for the analysis of the active pharmaceutical ingredient in dosage forms, regardless of the content of various excipients.