PP4. ON NOOTROPIC PROPERTIES OF DONSUMIN

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Donsumin is fraction of indole tryptamine alkaloids isolated from Arundo donax L consists of Donaxine, Donaxamine, Arundine, Ardine. Of these, only Donaxine according for 55-85% of the composition has been pharmacologically studied, Previously, it was established that Donsumine revealed elements of nootropic actionin the form of increased motor activity, increased search and research activity according to C. Hall. This was the basis for further study of the nootropic properties of the substance. It was found that Donsumin at a dose of 5 mg/kg orally accelerates production, short of the time of the reflex of finding the platform in the Morris watermaze to 60%, short of the food search reflex in the maze - 67%. The nootopic effect ofDonsumin was confirmed in experiments to eliminate the amnestic effect of scopolamine 1 mg/kg intraperitoneally in mice. Donsumin increased verticalization from phenamine 5 mg/kg, i.e. increased the sensitivity of DA2 receptors to the drug. The nature of the nootropic action was close to that of Ginkgo, Piracetam and others. In addition, it was found that Donsumin increases the sensitivity of central M- cholinergic receptors to arecoline 10 mg/kg, which was expressed in a shortening ofthe latent period and duration of tremor. It is known from the literature that Donaxinis a partial blocker of 5HT2 receptors that cause sedation. Strengthening of locomotor action under the influence of Donsumin begins at a dose of 1 mg/kg, and at a doseof 5 mg/kg is optimal. Donsumin, unlike Ginkgo and Piracetam, shows its nootropic effect immediately after administration, just like neurotransmitters. When comparing Donsumin with amphetamine or caffeine, a narrow therapeutic index was noticed.

According to the literature, amphetamine at a dose of 5 mg/kg caused activation of locomotor and cognitive activities, and a dose of 20 mg/kg caused a sharp excitationand convulsions leading to death, while in Donsumin the optimal dose is 5 mg/kg, and 50 mg/kg shows some sedative effect and preservation of verticalization, and LD50 is 1030 mg / kg, which indicates the narrowness of the therapeutic index of phenamine, while in Donsumin the difference between the effective and lethal dose is more than 200 times. In a comparative experiment, the study of the effect of Donsumin and ecdysten at a dose of 10 mg/kg on locomotor activity increased miceafter 15 days of administration showed that the effect of the first lasted 12 days, andthe second only 5 days. In view of the fact that the components of Donsumin differ in their structure from allknown nootropic drugs, a comparative study of their specific action was not considered appropriate.Thus, a new chemical class of low-toxic and safe nootropics with a high pharmacological latitude has been identified, which has an effect immediately after administration, while Ginko, Piracetam and others after a week of administration. With a 45-day application of Donsumin to mice at doses of 3 and 30 mg/kg orally all days of administration, it caused the activation of locomotor activity up to 250% compared to the control. No death of mice was observed. According to preliminary data, D2-, 5HT2, and M-cholinergic receptors are involved in the mechanism of nootropic action.