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ASSESSMENT OF THE EFFECT OF SOME FLAVONOIDS ON THE CENTRAL NERVOUS SYSTEM

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Abstract: The sedative activity of indole flavonoids, including pyrazolone and pyrazolone chloride, during the action of alcohol-induced sleep and fear stimuli was studied using the Sonberg method. In this study, pyrazoline and pyrazoline chloride reduced sleep time by increasing alcohol-induced sleep time, while in the Sonberg method, urine and feces excretion in experimental animals was reduced under the influence of noise and external factors. This suggests that the studied substances have a sedative effect.

Key words: hypnotic, pyrazoline chloride, Sonberg method, defecation.

INTRODUCTION

Relevance. In our country, a number of research works are being carried out to study the antitumor activity of synthetic substances. As a direct continuation of these research studies, antitumor, as well as general pharmacotoxicological properties of indole alkaloids are studied [1,2]. In the course of scientific research, such properties of indole alkaloids as vinkanine, pyrazoline iodine methylate and pyrazolium chloride were studied, as well as the features of acute toxicity and acute poisoning of various laboratory animals [3,4], the effect on the cardiovascular system, respiratory organs [5], and also affects the general condition of experimental animals [6]. In this regard, as part of scientific research on these alkaloids on the nervous system, screening studies of their hypnotic and sedative activity are carried out under experimental conditions.

Purpose of the study. Screening of hypnotic and sedative properties of indole flavonoids under experimental conditions.

MATERIALS AND METHODS OF RESEARCH. All studies were performed on white rats weighing 18-24 g and white rats weighing 170-250 mg/kg body weight, which were kept under standard quarantine conditions for 18 days. The test substances, iodine pyrazolin methylate and pyrazolin chloride, were administered to the experimental animals orally in the form of aqueous solutions at doses of 0.2, 2.0 and 20 mg/kg, and distilled water in equal amounts was administered to the animals of the control group. The neuropharmacological parameters of the test substance were studied using the Zon Berg methods in accordance with the recommendations given in the manuals and literature on motor activity, excitation or anti-fear activity [7-10] - the test substances Sleep-inducing property was introduced. White mice were injected into the abdominal cavity with a 24% ethyl alcohol solution in a volume corresponding to the body weight of the experimental animals, and the duration of sleep was recorded. When studying the properties of fear or emotions in response to excitation using the Sonberg method, white rats were placed in separate rooms, recording the repetition of urine and feces excretion caused by fear, when exposed to an external calling sound or noise. The discussion of the results obtained on the basis of the conducted studies was carried out in comparison with the control group, and statistical processing of the results was carried out using the methods listed in the work of R.V. Strelkov [12,13,14].

RESULTS AND DISCUSSION

In the studies in the control group, the effect of ethyl alcohol began after 24.4 ± 1.10 minutes, turned into sleep in 100% of the animals of this group and lasted up to 145.1 ± 10.2 minutes. Drowsiness was observed due to ethyl alcohol in the doses studied within the framework. The effect of iodine

pyrazolone matelot began after 29.4 ± 1.14, 31.7 ± 0.96 and 33.6 ± 1.89 minutes and lasted up to 135.3 ± 3.81, 125.7 ± 6.1 and 129.6 ± 2.14 minutes, respectively. The results obtained on the basis of the studies are presented in Table 1.

Table 1 Effect of pyrazoline on sleep onset time and duration

№	Substances and groups	Doses in mg/kg	Sleep start time indicated in minutes.	Sleep duration is given in minutes.	Difference in relation control in %
1.	Control group	Saline solution	25,4±1,15	154,2±12,2	
2.	Pyrazoline	0,3	27,4±1,12	137,3±4,8	13
		1,2	30,7±0,84	134,8±6,2	11,4
		11,2	32,6±1,79	129,54±2,44	14,6

Note: P≤0.05 compared with control group.

The studies have shown that pyrazoline iodine methylate reduces the onset time of sleep to 2; 4.3 and 6.2 minutes, respectively, compared to the control group, and the duration of sleep to 15.8; 18.4 and 23.6 minutes, respectively. Thus, pyrazoline iodine methylate did not show the ability to cause drowsiness, reducing the time and duration of sleep onset. Also, when exposed to pyrazoline chloride, such as pyrazoline iodine methylate, it was noted that sleep caused by ethyl alcohol in the studied doses under the influence of pyrazoline iodine methylate began after 26.4±1.11, 27.1±0.34 and 29.2±1.56 minutes and lasted up to 139.5±1.85, 138.4±1.3 and 15.2±2.25 minutes, respectively. The results obtained from the research are presented in Table 2.

Table 2 Effect of pyrazoline chloride on sleep onset time and duration

№	Substances and groups	Doses in mg/kg	Sleep onset time in minutes	Sleep duration in minutes	Difference relative to control in %
1.	Control group	Saline solution	25,4±1,13	154,2±10,2	
2.	Pyrazoline chloride	0,2	24,4±1,13	138,5±1,87	7,8
		1,3	28,1±0,36	139,6±1,2	10
		9,8	30,2±1,89	136,2±2,24	12,2

Note: P≤0.05 compared with control group.

properties to cause drowsiness, reduce the time and duration of sleep onset. But it was weaker than that of pyrosaline iodomethylate.

In Sonberg's studies, animals in the control group were observed to excrete feces and urine under all external influences, that is, under all 10 of these influences, defecation and urine excretion were recorded within 85-110 minutes after the administration of the test substance, respectively.

Table 3 The effect of pyrazoline iodomethylate and pyrazoline chloride on excretion of feces and urine according to the Sonberg method

№	Substances and groups	Doses mg/kg	Frequency of stool and urination as a result of each external influence	
			Repeated defecation	Repeated urination
1.	Control group	Distilled water	10	10
2.	Pyrazolone iodine methylated	0,1	6	8
		1,0	4	6
		10,0	3	3
3.	Pyrazoline chloride	0,1	7	8
		1,0	6	6
		10,0	5	5

Thus, under the influence of pyrazolone iodomethylate and pyrazolone chloride, it was observed that defecation and urine output did not increase proportionally to each other from 25-32% to 55-76%, respectively, compared to the control group. Thus, based on the conducted screening study, it can be concluded that the studied substances significantly reduce fear and emotional arousal.

CONCLUSIONS

In this study, pyrazoline iodine methylate and pyrazoline chloride reduced sleep time by increasing sleep time caused by alcohol, in the Sonberg method, urine and feces excretion in experimental animals decreased due to noise and external factors. Thus, based on the screening study, it can be concluded that the substances under study significantly reduce fear and emotional arousal. This indicates that the substances under study have a calming effect.

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