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Efficacy of a novel combination drug in the treatment of nicotine-associated behavioral effects in mice.

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An ability of a combination containing antibodies to S100 protein and to CB1 receptor for peroral administration (Brizantin®, Materia Medica Holding Company, Russia) to ameliorate behavioral effects of subchronic nicotine administration in mice was tested in the open-field.

Sixty white outbred male mice (22-25 g, 1,5 months old) were divided into four experimental groups: (1) control w/o nicotine (n=10): distilled water 0.4 ml/mice intragastrically (i.g.), and in an hour interval saline s.c. for 4 days; (2) control w/nicotine (n=10): distilled water 0.4 ml/mice i.g., and in an hour interval nicotine 0.3 mg/kg s.c. for 4 days; (3) reference (n=10): distilled water 0.4 ml/mice i.g., and in an hour interval nicotine 0.3 mg/kg s.c. for 3 days, on day 4 bupropion 3 mg/kg, in a 15-min interval nicotine 0.3 mg/kg s.c.; (2) test drug (n=10): brizantine 0.4 ml/mice i.g., and in an hour interval nicotine 0.3 mg/kg s.c. for 4 days. Animals were tested in the open field 30-min after the last nicotine or vehicle administration. Student's t-test was used for comparisons.

Table. The results of testing mice in the open field, Mean±sem.

	Motor activity time, s	Number of rearings	Rearings time	Number of explored holes	Exploratory activity time
Control w/o nicotine	74.1 ± 2.0	14.3 ± 1.5	14.0 ± 1.8	5.5 ± 0.9	2.6 ± 0. 6
Control w/nicotine	80.2 ± 1.3*	14.5 ± 1.9	11.8 ± 1.8	9.8 ± 1.4*	4.6 ± 0.9
Bupropion	78.6 ± 2	22.3 ± 2.2**#	17.6 ± 3.6	6.4 ± 1 .0	2.3 ± 0.3##
Brizantin	74.5 ± 2.9	17.0 ± 2.8	15.9 ± 2.5	8.3 ± 1. 6	3.8 ± 0.7

*p<0.05; **p<0.01 vs control w/o nicotine; #p<0,05; ##p<0,01 vs control w/nicotine

Subchronic nicotine administration resulted in increase in motor and especially in exploratory activity. Bupropion also stimulated motor and exploratory activity as compared with both control groups. In contrast, brizantine diminished associated with nicotine alteration in motor and exploratory behaviour of mice in the open field apparatus. Brizantin holds promise for improving treatment outcome in nicotine-dependent individuals.