Effects of pregabalin and topiramate on impulsivity and certain impulse-related behaviors
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MATERIAL AND METHODS

Animals
Male DBA/2J mice (age 5-9 weeks, 20-25 g) were purchased from Harlan (Barcelona, Spain). Mice were housed under controlled conditions (23 ± 2ºC, 12 h light/12 h dark). Standard laboratory chow and water were available ad libitum in a ventilated and barrier-controlled environment. A habituation/reinforcement task in which 1 hour of food access was allowed to increase task motivation in all experiments. All procedures were performed in accordance with guidelines established by the European Council Directive (86/609/EEC) and were approved by the institutional Animal Care Committee.

Drugs
Pregabalin (PGB, 10, 20 and 40 mg/Kg - Lyrica) and Topiramate (TM, 25, 50 and 100 mg/Kg - Topamax) were administered p.o. 1 h prior to testing in the different experiments described below. Mice were given a 15-day period of habituation prior to the actual study. (One drug was administered per day in a 15 days [days] phase) and in the chronic phase there were pre-treatment (7 days) and post-treatment (7 days) of drug administration. PGB or TPM were twice a day every 12 h.

Second-day
The open field consists of a transparent square cage (20 x 20 x 20 cm) with a white peripheral fence (1) (Fig. 2). Mice were individually placed into the open field, and their behavior was recorded with a video camera and analyzed with the SMART (Spontaneous Motor Activity Recording and Tracking) v2.5.3 software system (Panlab, Barcelona, Spain). Traveled distance (cm), mean speed (cm/s) and mean speed values in 10-min periods were analyzed.

Novelty seeking behavior was measured by using an apparatus described previously (2). (Fig. 3) consists of a 40 x 4 x 40 transparent acrylic square box with a black acrylic bottom and four equidistant holes placed in each corner and equipped with infrared photocells to detect the animal's presence. The box is made of two pairs of opposite walls with opposite doors. In this task, 125 mice were divided into different experimental groups. Animals were placed in the apparatus (2 pairs of opposite doors at opposite sides of the box) and tested in 5-min sessions. The open space in the left area and the number of transitions were recorded.

Prepulse inhibition
Prepulse inhibition is the phenomenon in which a weak prepulse stimulus suppresses or diminishes the response to a startling stimulus, and it shows the individual's ability to inhibit or gate the incoming inputs by adapting the amplitude reflexes (2). Animals were put in a soundproof chamber equipped with a loudspeaker (Panlab, Barcelona, Spain), and inputs, A C, were recorded with the system via infrared photocells to detect the animal's presence. Animals were recorded with a video camera and analyzed with the SMART program.

Cognitive processes

MOTOR ACTIVITY

IMPULSIVITY

CONCLUSIONS

• Pregabalin presented anxiolytic-like behavior, and modulated dopaminergic activity in the VTA.
• Prepulse inhibition was significantly different from control mice (p<0.05).
• The administration of aripiprazole or aripiprazole modified the phenotype (p<0.05) and antagonist dose-response profile.
• These findings suggest that pregabalin and topiramate present different pharmacological actions that should be taken into consideration for the treatment of psychiatric disorders with impulsive control impairment.

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