The data set describing cognitive performance after varenicline administration in a 3-choice serial reaction time task in rats

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ABSTRACT

The data shows attentional function, impulsivity, motivation, motor function, and motor activity in rats treated with varenicline, a stop-smoking aid. The data also shows these parameters in rats treated with varenicline after acute/chronic nicotine administration. Our interpretation and discussion of these data were described in the article "Varenicline Provokes Impulsive Action by Stimulating α4β2 Nicotinic Acetylcholine Receptors in the Infralim bic Cortex in a Nicotine Exposure Status-Dependent Manner" (Ohmura et al., 2017) [1].

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How data was acquired

Aluminum operant chambers measuring 26 cm × 26 cm × 26 cm (Med Associates Inc., St. Albans, VT, USA) were used.

Data format

Raw

Experimental factors

Nicotine and/or varenicline administration

Experimental features

Adult male Wistar/ST rats were used.

Data source location

N/A

Data accessibility

All data were presented here.

Value of the data

- The effects of stop-smoking aids on cognitive functions were of interest to many people.
- Some researchers might be interested in some parameters we did not focus on in the research paper [1].
- Clinicians can design human studies based on the animal data.
- The raw data would be useful if one would like to conduct reanalysis or meta-analysis.

1. Data

Data file 1 contains the raw data regarding Fig. 1 in [1]: several parameters (see below, Section 2) in a 3-choice serial reaction time task (3-CSRTT) in nicotine-naive rats. Data file 2 contains the raw data regarding Fig. 2 in [1]: several parameters in the 3-CSRTT in nicotine-naive rats after varenicline administration followed by microinjection of a α4β2 nicotinic acetylcholine receptor antagonist into the infralimbic cortex (IL). Data file 3 contains the raw data regarding Fig. 3 in [1]: several parameters in the 3-CSRTT in nicotine-naive rats after acute s.c. injection of nicotine and varenicline. Data file 4 contains the raw data regarding Figs. 4 and 5 in [1]: several parameters in the 3-CSRTT after continuous infusion of nicotine and acute/repeated oral administration of varenicline.

2. Experimental design, materials and methods

We used a 3-choice serial reaction time task to assess impulsivity and other cognitive functions in rats [1]. We recorded seven behavioral parameters, as described below.

(a) Premature responses (counts per session): a measure of impulsivity.
(b) Accuracy (percentage of correct responses): a measure of attentional function.
(c) Omissions (counts per session): a measure of attentional function and motivation.
(d) Perseverative responses (counts per session): a measure of compulsivity.
(e) Responses during time-out (counts per session): a measure of motivation and motor activity.
(f) Correct response latency(s): a measure of attentional function, motivation, motor function, and decision time.
(g) Reward latency (s): a measure of motivation and motor function.

As for data file 1, nicotine naïve rats received acute s.c. injection of varenicline (0, 0.0075, 0.075, and 0.75 mg/kg) 60 min before the testing session.

As for data file 2, nicotine naïve rats received acute s.c. injection of varenicline (0 and 0.075 mg/kg) 60 min before the testing session and intra-IL microinjection of dihydro-β-erythroidine (DHβE; 0 and 6 μg/side), a preferential α4β2 nAChR antagonist, 10 min before the testing session.

As for data file 3, nicotine naïve rats received acute s.c. injection of varenicline (0, 0.0075, 0.075, and 0.75 mg/kg, s.c.) 60 min before the testing session and acute s.c. injection of nicotine (0 and
As for data file 4, rats received acute oral administration of varenicline (0.075 mg/kg) 60 min before the testing session after 8 days of continuous nicotine (9 mg/kg/day, salt) or sodium tartrate administration with osmotic minipumps. The blood concentrations resulting from this dose in rats are comparable to those measured in heavy smokers [4,5]. Repeated oral administration of varenicline (0.075 mg/kg, once per day) was conducted after stopping continuous nicotine infusion.

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Transparency document. Supplementary material

Transparency data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.j.dib.2017.02.050.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.j.dib.2017.02.050.

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