

# One-day tropisetron treatment improves neurocognitive function in schizophrenia

June 1 2020, by Zhang Nannan



Functional magnetic resonance imaging (fMRI) and other brain imaging technologies allow for the study of differences in brain activity in people diagnosed with schizophrenia. The image shows two levels of the brain, with areas that were more active in healthy controls than in schizophrenia patients shown in orange, during an fMRI study of working memory. Credit: Kim J, Matthews NL, Park S./PLoS One.

Impaired neurocognitive function is a core feature of schizophrenia (SCZ). Sensory gating is a mechanism that filters stimuli, suppresses irrelevant stimuli and protects the integrity of cognitive function. Sensory gating deficits appear to be sensitive biomarkers of cognitive

impairment in SCZ patients. Inhibition mechanisms and sensory gating are typically assessed by the conditioning-testing P50 paradigm. Agonists for  $\alpha 7$  nicotinic acetylcholine receptor (nAChR) are considered potential therapies to improve the sensory gating and cognitive deficits of SCZ patients.

Tropisetron, a commonly used medicine against nausea and vomiting caused by chemotherapy and surgical anesthesia, is also a high-affinity partial agonist of the nAChR. Previous study demonstrated that tropisetron significantly improved overall cognitive deficits and P50 inhibition defects after 10 days of treatment. However, the immediate effect of different doses of tropisetron in patients with chronic schizophrenia is unclear.

Researchers from the Prof. ZHANG Xiangyang Research Group at the Institute of Psychology, Chinese Academy of Sciences (CAS), conducted research on the above issues. 40 SCZ non-smokers were randomly selected into a double-blind clinical trial with four groups: placebo, 5 mg/d, 10 mg/d, and 20 mg/d of oral tropisetron. The research team measured the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) and P50 inhibition before and one day after treatment.

After one day of treatment, the total RBANS scores of the 20 mg and 5 mg tropisetron groups, and the immediate memory of the 10 mg group were significantly higher than placebo group. The P50 ratio was smaller in the 5 mg and 10 mg groups than in the placebo group after treatment.

Furthermore, the improvement in RBANS [total score](#) was correlated with increased S1 latency, and the increase in immediate memory score was correlated with decreased S2 amplitude.

One day of treatment with tropisetron improved both cognitive and P50

inhibition deficits, suggesting that longer term treatment with  $\alpha 7$  nAChR agonists for these deficits in SCZ may be promising.

This work entitled "One-day tropisetron treatment improves cognitive deficits and P50 inhibition deficits in schizophrenia" was published in *Neuropsychopharmacology* on Apr. 29.

**More information:** Luyao Xia et al. One-day tropisetron treatment improves cognitive deficits and P50 inhibition deficits in schizophrenia, *Neuropsychopharmacology* (2020). [DOI: 10.1038/s41386-020-0685-0](https://doi.org/10.1038/s41386-020-0685-0)

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